DECEMBER 1954

FIREMEN

FIFTY-NINTH YEAR · NATIONAL FIRE PROTECTION ASSOCIATION

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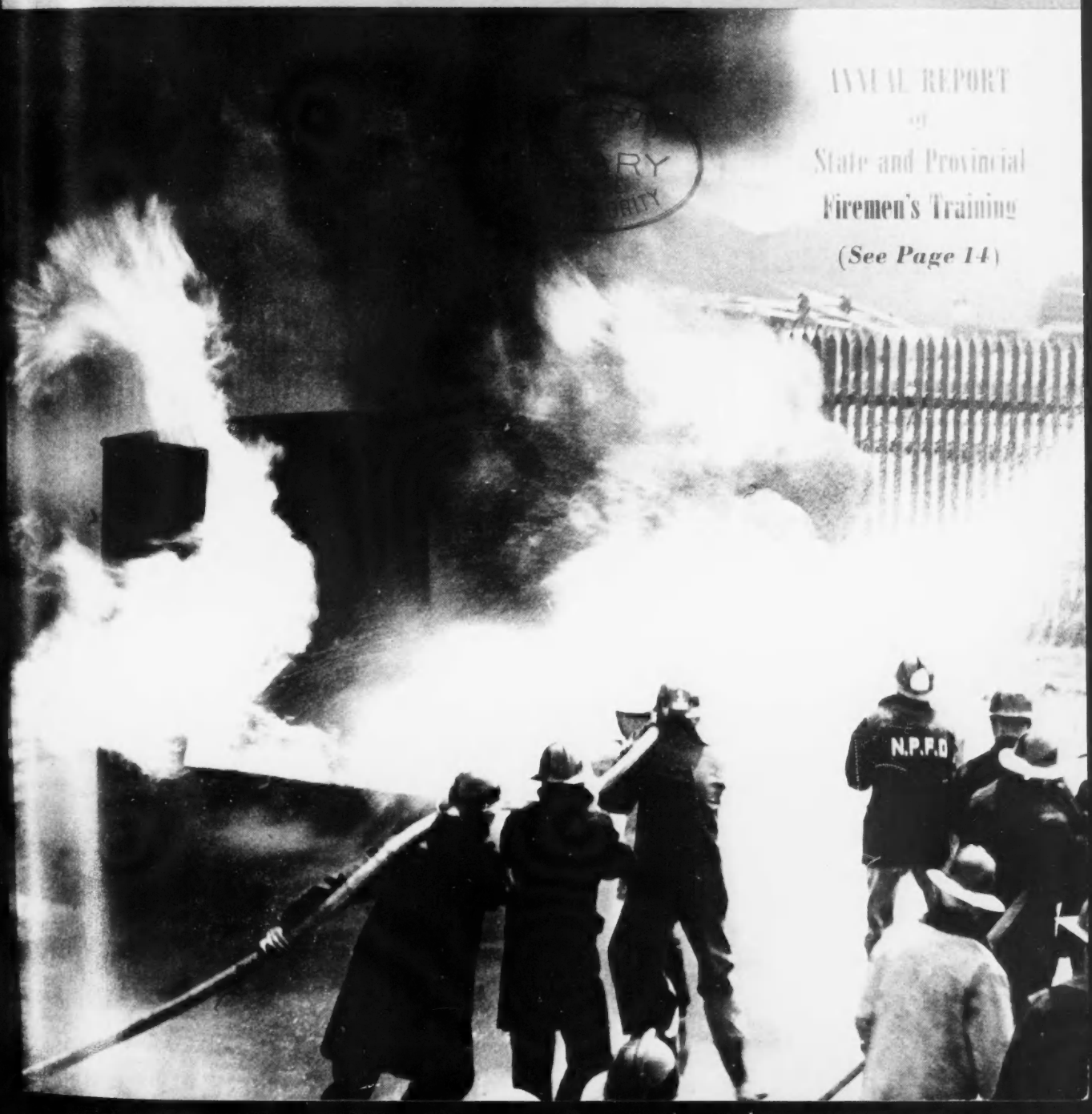

ANNUAL REPORT of State and Provincial Firemen's Training

(*See Page 14*)

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Fire Ball Special

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New 500 G.P.M. pumper, powered
by Chrysler Fire Power 183 H.P. engine.

A big city fire truck . . . priced within small community and rural area budgets.

Now there's a great new addition to the Ward LaFrance line of fire-fighting equipment! It's the Ward LaFrance Fire Ball Special . . . a completely new 500 G.P.M. pumper.

This Ward LaFrance Pumper is powered by the new Chrysler Fire Power 183 H.P. engine. It offers truly outstanding fire-fighting performance. Amazingly low in cost. The complete unit . . . body and chassis . . . is specially engineered and built by Ward LaFrance craftsmen to the same high standards of Ward LaFrance quality.

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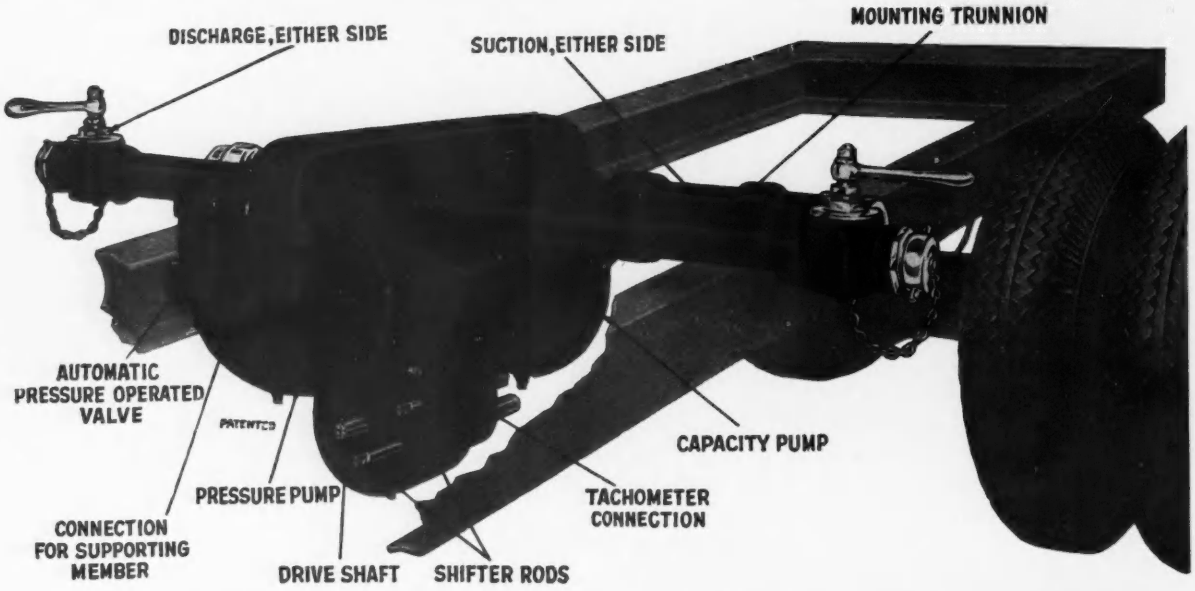


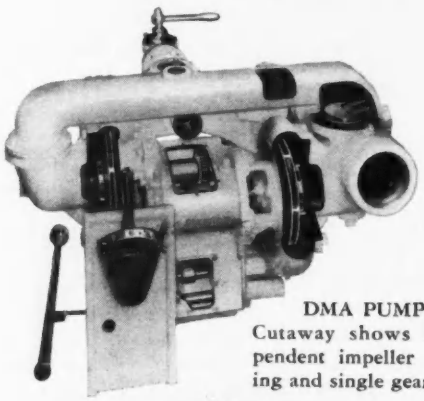
...that's why this BARTON-AMERICAN DMA can give you extra flexibility plus higher fire pump performance!

In *one unit,* you can get high volume at normal pressure . . . normal high pressures . . . and extremely high pressures for fog guns . . . all at very *moderate* engine speeds.

The two impellers are *independently* shafted and geared . . . to run alone if desired or together in series when needed. Low pressure pump handles dirty water without damage to the high pressure pump.

In addition, this Barton-American Duplex Multistage Centrifugal has *one point lubrication* . . . with all bearings running in oil inside *one* automotive-type transmission housing.

These *exclusive* design features give you *extra* fire-fighting flexibility and top performance with operating pressures to 400 pounds two stage or 850 pounds four stage. For full details, contact our Representative.



DMA PUMP
Cutaway shows independent impeller shafting and single gear box.

WRITE FOR BULLETINS:

Bulletin 8733 describes DMA Duplex Multistage Centrifugal Midship Pumps.

Bulletin 8734 describes DMB Duplex Four Stage Midship Pumps . . . pressures to 850 lbs.

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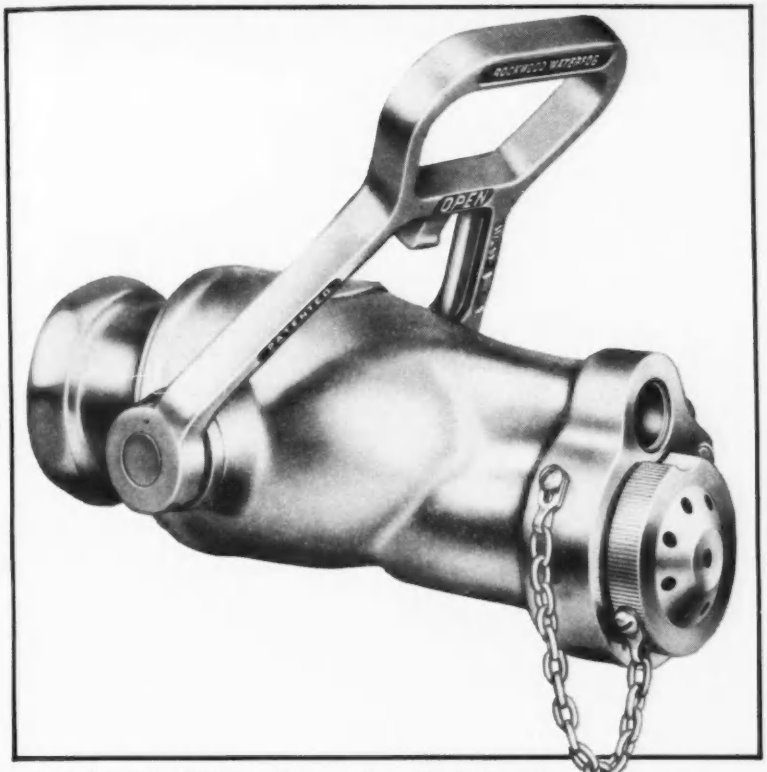

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This Nozzle is designed to put out Class A, B or C fires faster, safer and more economically. A quick shift of the handle instantly provides the right type of discharge for any type of firefighting job.

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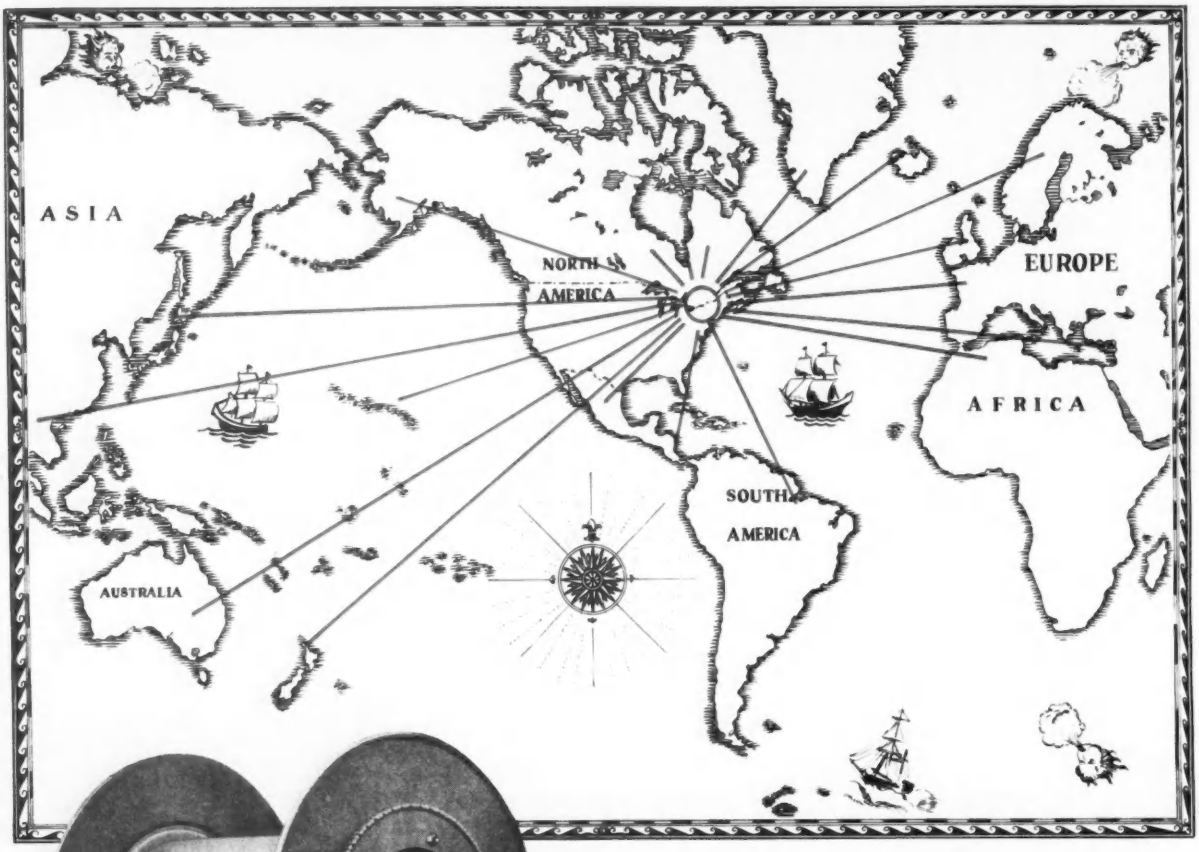

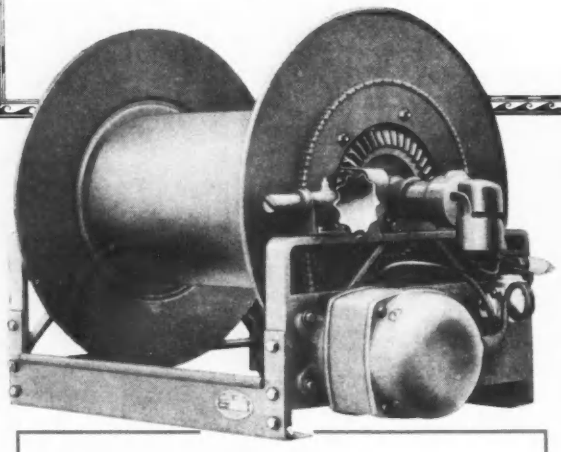

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Explosion-Proof

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MANUAL AND POWER OPERATED HOSE REELS FOR EVERY PURPOSE

Firemen

Volume 21 — Number 12

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PAUL R. LYONS — ASSOCIATE EDITOR
HENRY S. GERE — ADVERTISING MANAGER

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A VOLUNTARY NON-PROFIT ORGANIZATION
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Cover Picture

This month's cover shows fire fighters knocking down a flammable liquids fire during a fire school in the State of Washington. This is but one example of the type of training which was conducted extensively throughout the United States and Canada during the past year. A summary of this training appears on pages 14 to 17 of this issue.

As mentioned in the survey, at least 125,000 fire fighters participated in such training conducted in cooperation with State and Provincial educational representatives. A reported 10,732 firemen attended annual state fire schools. Many thousands more were trained by local, county and regional organizations which were not included in the training survey.

With excellent facilities and competent instructors available in most states, there is little excuse for fire departments which fail to keep their personnel trained competently in the latest techniques and equipment. There also is a wealth of information and ideas waiting for the fire officer or fire fighter who visits such training centers and makes contact with representatives from other departments or other states. Within a few months the 1955 fire school season will be beginning. Fire departments or individuals who want to obtain information on such training in their State or Province, should contact their State or Provincial Boards of Vocational Education, State University Extension Service or other agencies as reported in this survey.

Christmas Hazards

On November 17 the Boston, Massachusetts, Fire Department made acquaintance with a hazardous item being distributed for the forthcoming holiday season. Members of the department discovered that "street hawkers" are selling as toys a carousel and a Santa Claus and reindeer combination, each made of nitrocellulose. Apparently the toys were made in Japan and shipped into this country for the Christmas season.

The Boston Fire Prevention Division under the direction of Chief Edward N. Montgomery immediately called public attention to the hazards of these highly flammable toys. Chief Montgomery appeared on a TV program and demonstrated that such toys would ignite with a rapid burst of flame when an ordinary match was lighted and held within one inch of them. He stated that the material is about the thickness and has the same flammable properties of nitrocellulose film. The fire department has contacted retail distributors in the city who might sell such products without knowledge of the hazards. Chief Montgomery states that stores belonging to the Boston Retail Board are very cooperative and have promised not to sell the items.

On the recommendation of Chief Montgomery, the Boston City Counsel passed an emergency ordinance forbidding sale of nitrocellulose toys to minors and requiring a prominent fire hazard warning on all such items.

Other fire departments throughout the United States and Canada are urged to make special preparations for an influx of hazardous materials which often are distributed to the public before the Christmas season. "Unapproved" or inadequate fire extinguishers also are widely advertised and sold in this season, and fire departments have another problem of informing their communities of the importance of buying listed or approved devices.

Through the years, reputable manufacturers and distributors have heeded the warnings of fire department representatives, particularly when the department has focussed public attention on a product which can be harmful.

(Right) This year's NFPA Christmas poster.

Forecast for December!

North America and Vicinity

Cold weather followed by many avoidable fires and needless extinction of human life. In 25 selected communities 58 children and 17 adults will die from fire which, in many cases, will occur at night in their homes. Six fire fighters will die and 24 others will be injured when a hotel collapses after a "routine" fire. Another fireman will come home from his station just in time to be present when his son dies from a Christmas tree fire. In every one of these instances, fire cause and spread will be attributed to violation of simple fundamentals of safety from fire.

IF THE above had been written one year ago, it might have been a "perfect" prediction. For the tragedies cited all occurred during the month of December, 1953, and were described in only 25 reports in the "Loss of Life" files of the NFPA Fire Record Department. Fire fighters throughout North America know that this December may bring similar needless tragedies.

It requires no mental exertion, no broad educational background, no technical "know-how" to recognize the fundamental causes and contributing factors which caused these "loss of life" fires. In 3 cases the smoke pipes of wood burning stoves ignited wall paper or other too-close combustibles and the dwellings concerned were totally destroyed. In 3 more instances the man of the house added fuel to a stove fire and went back to bed and waste paper or other materials became ignited to destroy a home and extinguish lives.

Other fires in that month which caused deaths resulted and spread because of: children playing with matches, defective wiring passing through combustible fibreboard, non-firestopped wall openings, a cigarette buring in a sofa, kerosene poured on a coal fire, a kerosene lamp used as a night light, and two instances of fires involving Christmas trees — one tree being ignited by an open stove fire.

The 57 children who lost their lives in these fires ranged in age from 1 month to 17 years. In at least 5 instances fire blocked a stairway or some other path to safety, or some entry which a fire fighter could use to attempt rescue. Sometimes one child perished, but there were other instances where two, three, four, five and six children were trapped and killed because an avoidable fire started.

Because so many fire deaths result from such simple violations of fire safety principles, FIREMEN Magazine for years has been urging readers to participate in house-to-house inspection programs. There is no questioning of a fire fighter's spirit of selflessness when a life has to be rescued, nor of his ability to wield a nozzle and use equipment with skill and surety to knock down a tough blaze. But year after year the fire deaths which occur during the cold weather season emphasize the fact that fire fighters are not giving their knowledge of fire safety to the people in their communities. In fact, there is evidence to show that while fire fighters have apparently limitless courage when they are in back of a "wide open" nozzle, that same courage sometimes dims when they confront a housewife or home owner to deliver a convincing argument for fire safety. Yet a good inspection program may be the greatest public service a fire department can offer. It is strongly recommended to all fire departments by the International Association of Fire Chiefs as well as by NFPA.

Concerning the fires of last December, if one child had been told to get out of his house if fire occurred, he might not have suffocated in a closet in his room. If a mother had been convinced by a fire fighter that she should not carry a dried Christmas tree through a kitchen, another boy may not have perished. If every family in a rural area had been contacted by volunteer fire fighters before stoves were put into use for cold weather, many lives may have been saved.

This has been a "do-it-yourself" year in many respects, and fire departments can take advantage of the "craze" by contacting home owners and showing them how to gain protection from fire. Perhaps the "do" approach will be more effective than the "don't." For example, home owners can be told to follow the simple practice of closing every door in the house before retiring for the night. (Closed doors provide at least some hindrance to fire spread.) Rather than saying "Don't overload your electric wiring!", a visiting fire fighter might suggest "Only put two plugs into this outlet." Or rather than saying "Don't let your Christmas tree dry out" he can say "Use only flame retardant ornaments on the tree. Keep it as moist as you can, and try to throw it out before New Year's Day!" (For other Christmas hazards see page 9.)

The "do-it-yourself" campaign has brought out the fact that many householders are anxious to improve their homes and properties. Fire fighters can offer a wealth of positive advice which can give the amateur craftsman many new "projects" and at the same time promote the cause of fire safety. The fire fighter knows that open stairways and non-firestopped walls contribute to fire spread; that fuel oil brought indoors from the cold outside may expand and flood the range burner; that a stove or space heater should not block the only exit from a room. The average home owner may not know, or consider, these basic principles.

There are, of course, many other fundamentals of fire safety which must be observed. But past experience offers strong evidence that many persons are not just careless, they just do not know what is safe. There are nearly a million "salesmen" in the paid and volunteer fire service who can tell them. Those who want illustrated literature on the subject can refer to "Preventing Home Fires" (25 cents per copy) and the Christmas folder "Watch Out for Fire, Too, at Christmas Time" ($2.50 per hundred; $20 per thousand. Sample copies free of charge). Both may be obtained from the NFPA Publications Department, 60 Batterymarch Street, Boston 10, Massachusetts.

But, if your fire department does not make a direct attack on this problem of dwelling fire deaths, through personal door-to-door contact with the public, what's your prediction for this month of December?

Ten Firemen Killed in Philadelphia Blast

TEN members of the Philadelphia, Pennsylvania, Fire Department have died as a result of an explosion on October 28, of a tank containing dry cleaning solvents. In addition, 17 other fire fighters and three police officers were hospitalized because of injuries or inhalation of toxic fumes.

Scene of the tragedy was the Charles W. Berg Laboratories on North 5th Street. At 6:07 on the morning of the 28th, a telephone alarm sent Platoon C of Engine Company 2 and Ladder Company 3 to the laboratories, with Lieutenants Hayes Rommel and Charles Holtzman commanding. Battalion Chief No. 6, John J. News, also responded. On arrival Chief News sent Platoon C to the front of the building and led Ladder Co. 3 to the rear. (See sketch.) According to the information he had, ammonia fumes were leaking in the plant area. In an alley at the rear of the building were two 4,000-gallon tanks, one of which contained the solvent used for treating textiles.

Shortly after forcing a mesh-wire gate at the entrance of the rear alley, Chief News "saw a puff of smoke" and ordered first alarm sent on nearby Box 2825. As first alarm companies were arriving, headed by Deputy Chiefs Thomas A. Kline and Battalion Chief John F. Mangrann, and company commanders were giving orders, the tank containing solvents exploded and was smashed against the opposite wall of the alley. The concussion knocked down most fire fighters in the vicinity and threw some against walls and piles of storage drums. Chiefs Kline and Mangrann were killed instantly. Chief News lived long enough to order a second alarm at 6:18 A.M., then he collapsed and died.

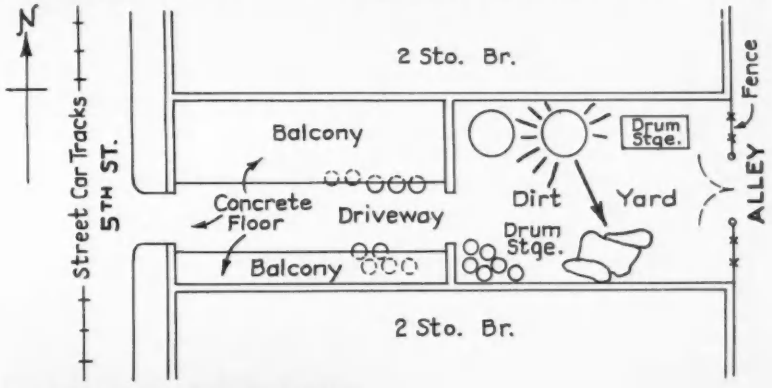
Second alarm companies, assisted by police, concentrated efforts to remove 22 fire fighters and 3 patrolmen who were injured by the blast, or overcome by toxic fumes. During the following days 7 more firemen died, and a fire department bulletin stated that at least 5 of them were victims of fume inhalation.

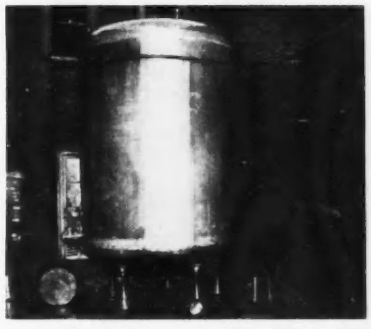
According to reports, the 4,000-gallon tank contained a solvent composed of orthodichlorobenzene, propylene dichloride, and ethylene dichloride. It was assumed that the vent pipe at the top of the tank became clogged with impurities. A chemical reaction between the impurities, moisture, the aluminum alloy tank and solvents built up pressure that the vent could not relieve.

Reports also inferred that the fire fighters were affected by phosgene gas resulting from the reaction, but that poisoning also could have been caused by the orthodichlorobenzene, propylene dichloride or ethylene dichloride. Some fire fighters in the vicinity were drenched with the solvent when the explosion occurred. It was also reported that this plant had no permit covering this occupancy hazard. (See NFPA *Fire News* for December, 1954.)

At the present time no authoritative information on the tragic incident has been released to NFPA. When such information becomes available a more comprehensive report may be prepared for NFPA publications.

(Left and below) Picture and sketch of alley where explosion occurred. The tank was located on the north side of the alley (indicated by starred circle) and was blasted across to the opposite wall, as shown in picture at left. Each of the two tanks was about 10 feet high and six feet in diameter, while the alley was approximately 116 feet long and 45 feet wide. Involved tank was "second hand" and made of aluminum. Apparently "steam cleaning" had not removed all impurities. Other vertical tank, said to contain oil, was not involved in the explosion. *(Phila. Bulletin photo.)*





Construction and mounting of remaining tank duplicated that which exploded. News reports stated that owner was fined for failure to locate tanks properly, failure to provide proper trenching and venting and failure to obtain permit for installations.

Another view of exploded tank where it landed in drum storage on other side of alley.

Long Beach Fire Department

By Warren Y. Kimball, Manager, NFPA Fire Services Department and Editor of FIREMEN Magazine

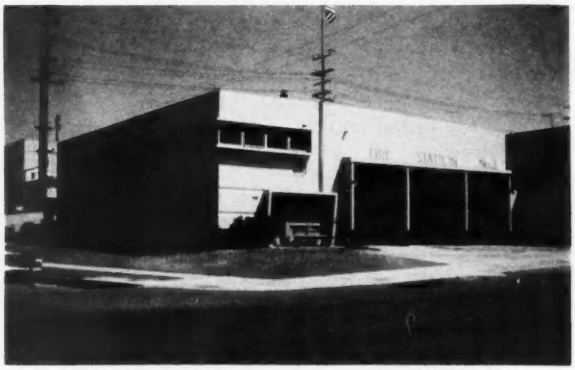
THE Long Beach, California, Fire Department, under Chief Frank S. Sandeman, protects a rapidly growing city of 285,000 population in some 40 square miles of Los Angeles County, California. The department has 358 employees including a fire force of 322 men. Deputy Chief William L. Head is, in effect, the executive officer and on alternate weeks relieves Chief Sandeman of being on call " 'round the clock." Assistant Chiefs serving as platoon commanders are Mead L. Harman for "A" Platoon and William M. McGree for "B" Platoon. There are 3 fire combat Battalion Chiefs on each shift. Other chiefs include Max Bryan, Training Officer; Leonard V. Foster, Fire Prevention Engineer (a job classification open to captains by examination); Arlie A. Wallace, Master Mechanic; and Jere Gunther, Acting Fire Alarm Superintendent.

The department has 17 engine companies including one "quad" (pumper-ladder) and 2 truck companies (one 100-ft. and one 85-ft. Seagrave aerials). There is a crash truck at the airport, a well-equipped squad truck with high pressure fog guns and a power winch at Headquarters, and a turret truck serving as tender for the Headquarters pumper.

There are also two new Diesel-driven fireboats, the second of which was scheduled for service October 16. Each boat is 58 ft. 6 in. long and pumping capacity is rated at 4500 gpm at 150 lbs. These boats have a number of interesting features. For example, once the engineer starts his engine, all operating may be done directly from the pilot house. Each boat has 3 large monitor nozzles and 12 discharge gates, each equipped with "Pressurator" gages and valves for individual control. There is a booster reel for fires on yachts and other small craft, and two large hose reels which may be rotated in any direction. One of these carries two 500-ft. lines of 2½-in. hose, while the other carries 500 ft. of 2½-in. hose and 400 ft. dual lines of 1½-in. hose.

On each side of the fireboats are 1½-in. fog security lines for attacking flammable liquids fires on the surface of the water. Four forward hose outlets have an adjustable foam proportioner and the forward turret is supplied by a fixed foam proportioner. The interior of each fireboat is protected by CO_2 equipment. Each boat also has a 5000 cubic-foot "Homelite" blower for ventilation or smoke removal at fires.

One of two new Diesel-powered fireboats of only 58-ft. length and rated at 4500 gpm at 150 lbs. Built-in foam proportioners supply 4 forward 2½-in. outlets and forward monitor. Boat has divided reels accommodating 3 lines of 2½-in. hose, 3 lines of 1½-in. hose, plus booster reels with fog nozzles for yacht fires. Once engines are started all controls are in the pilot house. (Forward rails have been removed.–Ed.)



Station No. 3 is typical of four new houses already built. Two-story living quarters at one side of the apparatus room make a compact structure with dormitory only 8 ft. higher than apparatus floor. Facilities include a large study room, private telephone room, battalion chiefs' quarters, and large rear parking area.

(Plans are underway to hold examinations for a new job classification "fireboat operator" which will be second in command under the captain.)

In the Department there are now 10 Mack pumpers with 1250 gpm Hale pumps. Master Mechanic Arlie A. Wallace points out that the trucks are geared for easy handling in city traffic so that no overdriving, no double-clutching, and little gear shifting is necessary. "Low speed" is necessary only when starting from a dead-stop. Fifteen pumpers are equipped with high pressure pumps and reels for small fires.

The Long Beach pumpers have a number of features of interest. On each side is a special compartment for 4-in. "soft suction" hose, which is connected to pumper inlets by large gates. The divided hose bodies carry 1600 ft. of 2½-in. hose in addition to several lines of 1½-in. hose. Hose loads have hand loops showing where to pull off 100 and 200 ft. of hose in each bed. Gage panels are hinged for ready access to the space behind the panels.

Seating capacity is provided for the crew. Since a serious accident no men ride the tailboards of the newer apparatus. As another safety feature a short piece of old hose is employed to cover the iron shoes at the end of ladders on each pumper.

ASSIGNMENT cards are prepared on a zone basis and provide for a 4-alarm response. Most districts bring 2 pumpers, 1 ladder and a battalion chief on first alarms, but high value response at night includes 3 pumpers, 2 aerials, 1 squad, a battalion chief and the assistant chief on duty. There are street alarm boxes only in the high value area but when the dispatcher announces any alarm over the radio he gives a zone number as well as the street location. The zone number indicates the running card assignments which may be different for day and night response.

Each engine carries a detailed map prepared by the Department with information pertinent to its district. Last year there were 1,941 fire calls. In addition, 3 fire department ambulances answered 3,261 calls and the department answered 458 calls for "special activities," (as emergencies other than fire are classified) making a total of 5,660 calls answered.

The personnel training and management program of the Department follows the latest concepts of fire department administration. Battalion chiefs meet each morning with the assistant chief on duty. This permits them to be advised on late developments and also to check the work schedules of the various units for proper manning.

When a man is absent due to sickness the battalion chief in the district where the man lives makes a visit and sends in a report. The chief can, where advisable, require a doctor's release to permit the man to resume work. Fire fighters are permitted to relieve their opposite number but are required to sign a relief sheet giving name and time of relief. When a man signs on he accepts full responsibility for the position he covers. Men are allowed 12 shift exchanges per year but these must be signed for and are marked on battalion chiefs' calendars and are subject to approval by the assistant chiefs.

Inspection Program

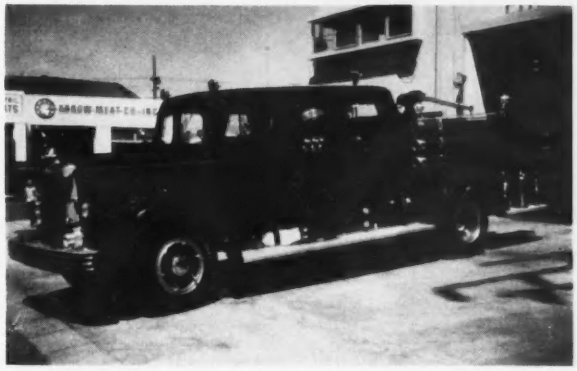
Fire companies make "on the air" inspections once a week in outlying districts and twice a week in high value areas. These are not superficial visits but complete studies of the properties inspected. The Fire Prevention Office schedules the inspections and gives "chapter and verse" references which the company is to study prior to inspection, such as the NFPA Handbook of Fire Protection and other specific instructions. Each station has a fire protection library with approved reference material. At least one inspection each month must include a fire problem for detailed study in quarters as a training exercise.

A list of inspection assignments is approved by the deputy chief and care is taken not to interfere with training schedules. The inspection assignments go to the assistant chiefs who check to see that inspections have been made, because some appointments may be missed due to fire duty. Correction notices filled out by fire companies are sent to the Fire Prevention Office for follow-up and that office informs the company concerned of the action taken. When the inspection is completed it is checked off a master list. Last year 861 detailed inspections were completed.

In addition, fire companies annually test private water systems (17), automatic sprinkler systems (145), standpipes (153), and fire escapes (141). The fire force also inspects all hydrants annually and at Christmas time there is a weekly inspection of all mercantile establishments.

On monthly school fire drills, as required by law, a chief and a fire company go to each school and observe each exit. A blocked exit sign may be used to reroute pupils. The fire officers confer with the school principal after each drill.

The Long Beach fire department is very proud of four new stations, built to meet the needs of a rapidly expanding city. Some 35,000 residents were taken into the city in a recent annexation. A new station will be provided for Engine 18 as soon as new boundaries are established. Adjacent to new Station 17 is a 300 by 500-ft. training grounds. There is also a handsome new Station 16 at the Airport housing 3 pieces of equipment. (A new crash truck is under construction.)



One of the new 1250 gpm Class A, Mack pumpers with 6-man cab. Note built-in 4-in. soft suction lines attached (on each side) with swivel connection. Truck is geared for city traffic, carries 1800 ft. 2½-in. hose, 600 ft. of 1½-in. hose, and has a 200-gallon tank.

Engineers of the National Board of Fire Underwriters have approved the relocation of several old fire stations. Each new station can house at least two companies. Officers' quarters are on the first floor with attractive metal desks, files, typewriters, and an "egg-crate" type ceiling light, a much appreciated fixture. Nearby is a recreation room with a blackboard for planning inspections and fire fighting operations. Also on the main floor is a dining room and kitchen with gas range and a Navy-type mess table. There is a "home telephone" roomette for the fire fighters.

A long commodious bunk room is on the second floor only 8 ft. higher than the apparatus floor so that the sliding pole is very short. Above the apparatus room is an attractive study room provided at the request of men who found it difficult to study in the recreation room in competition with television. There is also a top-side sun deck at the rear.

The Training Division consists of a chief, captain, and stenographer. The present training school is located at Station 10, which also houses the maintenance shop and the fire department photographer.

Probationary men receive a 5-week intensive course at the school and each fire company drills once a month under the training officers. The drill instructor prepares a field report showing the evolutions conducted and the men taking part.

Three training manuals have been issued. There is good visual aid equipment including a "Vu-Lyte" projector and a miniature building for ventilation instruction. Basic training takes at least 24 days. The training officers have a 5-month proficiency sheet for probationers who must come to the school each month for a written examination.

Where men have attended basic drill school, a passing mark of 87 is required but where men have not yet attended drill school, 80 is accepted as passing. Chief Bryan of the Training Division has 3 sets of 25 questions ready each month and there are no "repeat" questions.

(*Continued on page 23*)

State and Provincial Firemen Training — 1954

By Paul R. Lyons, Associate Editor

TODAY'S pace of industrial activity is tangibly affecting the fire service, as evident in this annual summary of State and Provincial firemen's training in North America during the fiscal year ending June 30, 1954.

Even in this brief analysis, the variety and scope of training activities indicates that the fire service is taking responsible action to cope with fire problems of our growing communities and industries. For the past several years the total attendance at fire schools has been increasing steadily, and the development of new training facilities, the use of new and better equipment and ideas and fire fighting techniques, all combine to stimulate interest in more and better training throughout the fire service.

The report on these pages includes only the subjects and attendance reported as part of State and Provincial training programs. Thousands more firemen were trained by local instructors in departmental and county fire schools, and schools or annual meetings conducted by state fire chiefs' and firemen's associations.

To show "what the other fellow is doing," the editors of FIREMEN magazine present below some of the highlights of firemen's training during the past fiscal year. (Where names of States or Provinces are mentioned the reference, unless otherwise stated, is to the annual fire school or training program conducted in cooperation with State or Provincial Vocational Departments of Education — ED.)

ANNUAL STATEWIDE FIRE SCHOOLS 1954

State	Firemen Attend.	No. Years Held
Alabama	148	18
Arkansas	116	—
Colorado	475	21
Connecticut	273	13
Delaware	52	6
Florida	182	25
Georgia	314	3
Idaho	248	5
Illinois	640	30
Iowa	624	30
Kansas	378	
Kentucky	635	31
Louisiana	141	23
Maryland	269	21
Michigan	489	26
Minnesota	281	26
Mississippi	103	3
Missouri	153	
Montana	60	14
Nebraska	957	17
No. Carolina	555	26
Ohio	131	9
Oklahoma	156	21
Pennsylvania	510	15
So. Dakota	511	25
Tennessee	155	11
Texas	843	25
Virginia	176	8
Washington	828	
W. Virginia	195	22
Wisconsin	134	
Total	10,732	

"Fog" Fire Fighting

Highway construction and slum clearance in some cases has proven a boon to the fire service by providing buildings for demolition. This has resulted in a number of supervised dwelling fires in which fire fighters practiced the techniques of indirect application of water fog. In Maryland, several such fires were conducted, including one at Annapolis where six fire companies practiced on a multiple dwelling. Robert C. Byrus (member, NFPA Committee on Firemen's Training), Director of Fire Service Extension, University of Maryland, and several of his assistants participated in this operation. Similar "fog" training sessions were conducted in Saskatchewan, Illinois, Michigan, North Carolina, Ohio, Texas and West Virginia. Not part of the state training program but still significant are the fire tests conducted at Kansas City, Missouri, in July (see FIREMEN for October, 1954), and at the Savannah Ordnance Depot as part of the Fire School of the Southern Wisconsin and Northern Illinois Firemen's Associations.

Flammable Liquids

Increased attention was given in many fire training centers to the problems of flammable liquid fires. In some cases the training consisted of spectacular demonstrations (such as at Kansas City), but for the most part, fire fighters received actual experience in combating such fires. In Washington jet fuel and "jelly" gasoline fires were extinguished. In New Mexico and Indiana gasoline fire control was also a training subject. At the Savannah Ordnance Depot large oil pit fires, spill fires and fires in oil tanks were controlled and extinguished. At Texas and Michigan attention was concentrated on truck transport fires involving gasoline. West Virginia, Colorado, Connecticut, Illinois, Maryland, Oklahoma, South Dakota and Nebraska also had flammable liquid fire training.

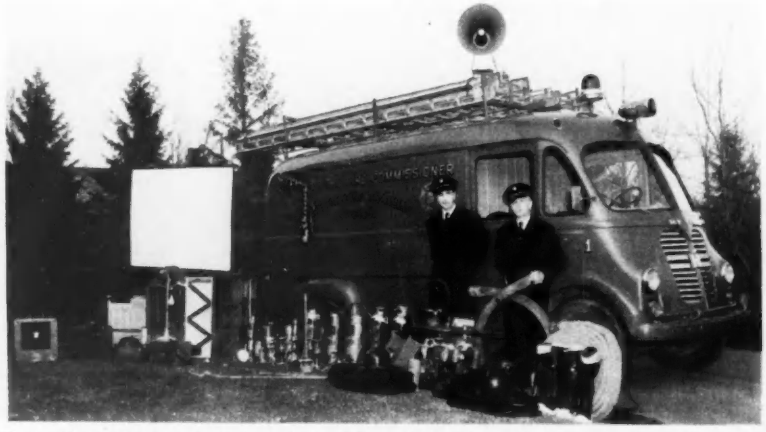
TOTAL FIREMEN RECEIVING TRAINING*
(State and Provincial Programs Only)
Year Ending June 30, 1954

State		State	
Alabama	560	New Jersey	139
Arkansas	2,121	New Mexico	222
California	5,737	New York	9,513
Colorado	5,036	No. Carolina	555
Connecticut	1,039	No. Dakota	514
Delaware	939	Ohio	3,992
Florida	1,117	Oklahoma	1,255
Georgia	5,007	Oregon	2,225
Idaho	248	Pennsylvania	8,172
Illinois	640	So. Dakota	1,261
Indiana	6,313	Tennessee	790
Iowa	4,951	Texas	4,336
Kansas	1,656	Vermont	624
Kentucky	1,452	Virginia	994
Louisiana	335	Washington	15,920
Maine	337	W. Virginia	624
Maryland	2,006	Wisconsin	307
Massachusetts	722		
Michigan	1,530	Total U.S.	105,855
Minnesota	1,950	Ontario	2,686
Mississippi	2,563	Saskatchewan	8,932
Missouri	3,258	Br. Columbia	7,004
Nebraska	5,005		
Nevada	430	Grand Total	125,117

*As reported to NFPA Fire Services Dept.

Instructor Training

The teaching of fire department instructors is now a regular feature in most training school programs. Special emphasis was given to this subject in California and New York State. Two fire service instructors' conferences were held in California; the first, at Santa Monica, was attended by 51 officers and training directors. The other conference was held at San Mateo and had an attendance of 66



Itinerant instruction is an important phase of firemen's training in the Canadian Provinces. Here's one of the Civil Defense pumpers used in this program, and the two instructors who travel to fire departments throughout Saskatchewan. Note radio and movie equipment and model buildings at left, the variety of fire extinguishers, and metal ladders on top of the pumper.

fire officers and instructors. In Buffalo, New York, the 5th Annual Instructor Course was attended by 70 state instructors, together with representatives from England, Ontario, New England States and firemen's organizations.

Florida, Idaho, Mississippi, North Dakota, Georgia, Massachusetts, Oklahoma, West Virginia, Iowa, Illinois, Ohio, and Indiana stressed instructor training.

Inspection Procedure

Another regular feature of fire school programs concerns training in inspection by fire department personnel. In Ontario 55 municipal and industrial fire inspectors participated in the annual "Fire Inspection Practices" course. Those who completed the course received a copy of the NFPA "Inspection Manual" which the Office of the Ontario Fire Marshal has presented for the past several years to students who obtain certificates. Another special short course for fire inspectors was held at the University of Maryland, through which 40 fire service members received certificates. West Virginia, Georgia, Missouri, Florida, Kansas, Ohio, Indiana and Iowa also stressed this subject.

Officer Training

More attention is being given to advanced training of chief officers. Virginia conducted a special two-day fire chiefs' institute with 122 attending. Ontario scheduled another two-day conference at the University of Toronto, with 62 municipal fire chiefs and other chief officers attending. Connecticut conducted a 3-day Fire Chiefs' Disaster Institute in December, 1953, with 48 fire chiefs and Civil Defense officials attending. Florida, Indiana, Idaho, California, Missouri, West Virginia and Washington also scheduled such training in administration and other subjects important to fire officers.

Industrial Training

Another significant feature of many fire school training programs is the increased attendance of industrial fire brigade personnel. In Florida, Mississippi and Connecticut members of hospital and institutional fire brigades were included in this instruction. Kentucky, Indiana, Iowa, Tennessee, Oklahoma and California also devoted training sessions to instruction of industrial fire brigade members.

Students tackle an "aircraft crash fire" at the 21st Annual Short Course for Firemen at the University of Maryland. Note that attack is made from windward side with two lines along fuselage to permit quick "rescue" and to protect gasoline fuel supply in wings. Other lines are used in flanking attack on gasoline spill fire. At Maryland these classes lasted three hours, giving each student opportunity to handle the nozzles as well as to be in back-up position.

Aircraft Crash Fires

An exceptional feature of firemen's training during the past year was instruction in techniques of handling aircraft crash fires with affiliated rescue problems. (See NFPA Standard No. 406 — "Aircraft Rescue and Fire Fighting Techniques for Municipal and Rural Fire Departments" (price 35 cents per copy) and NFPA Aviation Bulletin No. 82 — "Aircraft Crash Rescue Problems" (price $1.50 per copy). In a number of instances, fire fighters worked on fire-involved plane fuselages which were provided by government airport installations. In the Maryland fire school a combination problem was set up which included an aircraft fuselage, several wrecked automobiles (with tires) and an oil spill fire. Fire fighters then had to apply sound techniques in simulating rescue from the aircraft and extinguishing the fire with water fog streams.

Similar problems were conducted in Delaware, South Dakota, Texas and Washington.

Pump Operation and Maintenance

Most fire schools devote some portion of their program to instruction in pump operation and hydraulics. However, two training centers have developed intensive programs for this specialized subject. At the University of Maryland five schools were held in May and June, with representatives of five different pump manufacturers instructing the students in their particular make of pump.

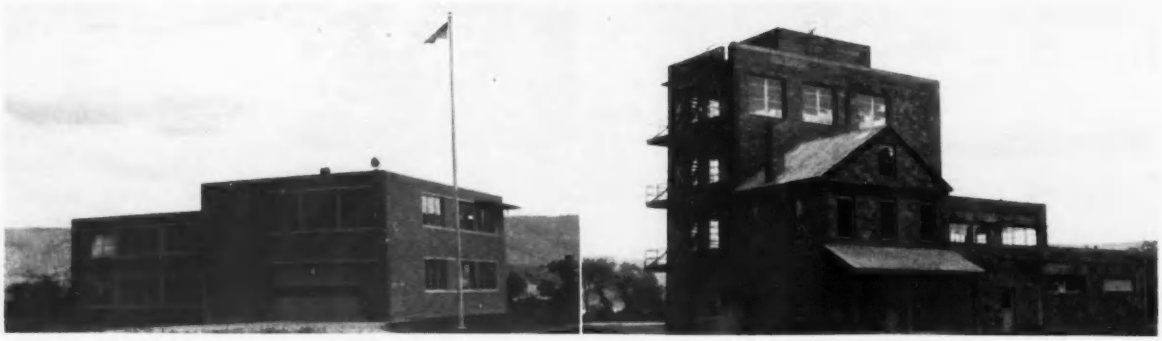
The North Carolina Pump School has divided such instruction into a 3-yr. course. Fire fighters must pass requirements of each successive year in order to obtain the certificate of the school.

A constructive trend in training is evident by the attention given to apparatus maintenance. The Virginia State Fire School included maintenance as one of the major subjects of its week-long course. New York State conducted a special course for 15 master mechanics who received certificates after one week's training at the shops of American-LaFrance-Foamite Corporation and the Ward-Lafrance Truck Corporation in Elmira, New York. Nebraska and Louisiana also stressed apparatus maintenance in their annual fire schools.

Rural Fire Fighting

Instruction in the special problems of rural fire fighting was given in a number of training schools. Forest, grass and brush fire fighting was stressed in Kansas, South Dakota and Arkansas. At Nebraska special instruction was given in the construction and use of cisterns for water supply in farm and rural areas. California varied its program by stressing highway fire control during forest and brush fires.

Students at the West Virginia State Fire School watch the pattern of a large caliber fog nozzle attached to a big line.



New state training facilities for firemen are located in Lewistown, Pennsylvania. At left is the administration building which includes offces for the staff, a fire station, a large assembly room with accordian-type partitions, a pump classroom and shower and locker room facilities. At right is the 5-story and basement drill tower which has been designed to allow duplication of almost every type of building fire condition which fire departments may encounter. Every floor and section of this building will be used for actual fire fighting problems.

Special Fire Problems

Control of burning rubber was a feature of the fire school programs in Nebraska, Texas and Maryland, all of which set up special problems with mounted or piled truck tires. In Texas similar procedures were conducted for fires in gasoline, sulphur, magnesium and cotton while Indiana and Idaho gave attention to fires in liquefied petroleum gas. At the Savannah Ordnance Depot large scale demonstrations were also conducted of fires in ammunition and explosives to give evidence of the fire fighting problems involved when fire occurs in these ordnance materials. Maryland also stressed the fire problems of explosives and plastics while in Tennessee special attention was given to the fire apparatus and fire fighting techniques required in a chemical plant.

Electrical

Electrical hazards and the special techniques required for fire fighting in electrical installations received attention in several fire schools. In Michigan a course was given in electrical inspections with emphasis on the hazards of power lines. At the Savannah Ordnance Depot fundamental safety principles of removing a man from a charged wire were demonstrated by Keith Royer and Lloyd Nelson, fire service instructors at the University of Iowa. In Idaho attention was given to emergency lighting for fire fighting operations.

Radio

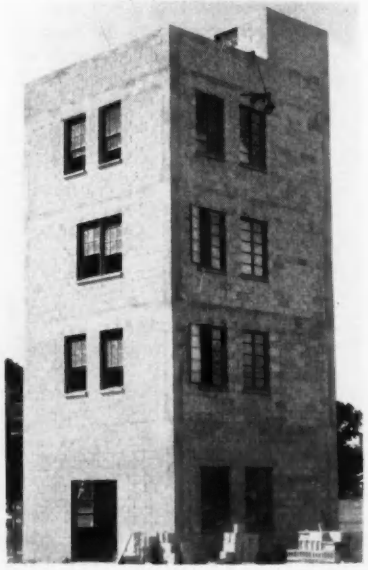
The importance of communications to the fire service has been reflected in the attention given to instruction in the use of radio. New York State, which has a growing state-wide two-way fire radio network, has developed a course in "Radio Procedure for Firemen." By July 1, 1954, a total of 836 firemen had completed the course. Maryland, Ohio, and Michigan also devoted some portion of instruction to radio procedures.

Arson and Sprinklers

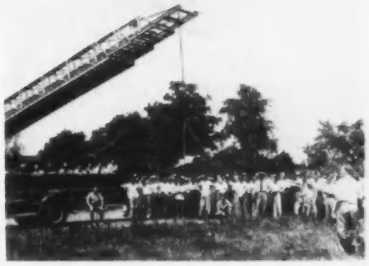
The 10th Arson Seminar was held at Purdue University at Indiana with more than 350 representatives of fire and police organizations attending. California also conducted a special arson institute in cooperation with the Extension Division of the University of California in Berkeley. This course had 165 arson investigators attending from fire and police departments, military installations and industries of California, Oregon, Washington, Idaho, Nevada, Utah and Arizona.

Another subject which has received greater attention is the use and operation of automatic sprinklers and automatic fire detection systems. The fire school in Virginia devoted a major portion of its program to this subject. Idaho, Michigan and Alabama, Texas and Maryland also stressed identification of sprinkler heads, their operation, and the importance of fire departments' utilization of sprinkler and standpipe connections on the fireground.

New buildings under construction at the Florida State Fire College. Below is the experimental and training building of which the first two stories are 41 feet square and the top story 21 feet square. There will be no permanent partitions inside the building. Partitions will be of combustible materials to present actual fire fighting problems. Interior is of Red Rock. Steel stairs and an observation tower are on the outside to permit a close view of what happens in the interior. Inside of building also features an elevator shaft and stairway with steel doors for closing off each floor. Thermo-couples are installed at floor level, eye level and ceilings. Plans call for a 60-ft. addition to first floor to duplicate a warehouse fire. At right is the 4-story and penthouse drill tower which has standpipe and sprinkler systems, a variety of window types and open and enclosed stairways in the interior.



Action during one of the regional firemen's training schools in the Province of Ontario



Demonstration of lowering an injured person from an aerial ladder. This was part of the fire training program of the State of Michigan.

Miscellaneous

Other activities throughout North America indicate the trends in firemen's training and fire department activities. Two "mileposts" in firemen training were the Silver Anniversary celebrations of the fire schools in Texas and Kansas, both of which completed 25 years of service in 1954. Another major event was the completion of the training facilities of the Pennsylvania Fire School at Lewistown. It is anticipated that the $650,000 training site will be in full operation in the Spring of 1955.

In the Florida State Fire College at Ocala, a new combination drill tower and an experimental and training building are being constructed for firemen taking training under the state program. The University of Maryland has also constructed a special building for fire fighting and rescue operations.

Readers of FIREMEN will recall mention of the excellent facilities developed in Towson, Maryland, for use by both paid and volunteer fire companies in Baltimore County. While these are not used as part of the state training program, they do reflect the importance of modern and adequate training facilities. (See FIREMEN for October, 1954). In the November issue of FIREMEN an article described the newly dedicated training academy, now available in Rochester, N. Y., which will be used by fire departments of Monroe County. "Straws in the wind" indicate that other modern fire training facilities are also being planned for Boston and Buffalo.

One important phase of firemen training is itinerant instruction, such as that in Ontario, British Columbia and Saskatchewan. In these provinces instructors travel to outlying communities with fully equipped Civil Defense pumpers. In British Columbia, three of these travelling units provided the means for 590 fire fighters to obtain certificates of training, making a total of 4,600 fire fighters in that Province who have now received certificates. In Saskatchewan, which held 24 schools for volunteer firemen, special training courses were held for Boy Scouts, while in Ontario "Radiation Monitoring" was the basis of an instruction course for 18 fire fighters in the Toronto area.

Three fire schools introduced public speaking in their programs. In Kansas and Illinois this subject was included in a course for fire officers, while in Maryland a journalism professor taught public speaking to fire department instructors who also studied how to prepare press releases for newspapers, radio and television stations.

In New York State a new training course called "Single Company Operations" was introduced. That State's Bureau of Fire Mobilization and Control also published its "Guide to Fire Mobilization and Mutual Aid Plans in the State of New York."

Maryland and Michigan gave attention to the importance and methods of making water flow surveys in a community. Idaho included a 15-hour course on human relations, while at Nebraska students of the fire school again gave attention to the standardization of fire hose and appliance threads. At the Idaho Fire School attention was given to the problems involved in the transportation of explosives. New Jersey, which held 5 firemen's training classes in Camden County, now plans to extend organized instruction to Cape May County. Another new development is the Eastern Connecticut Volunteer Firemen's Training School which was started in June in Willimantic. This will serve firemen in Windham, Tolland and New London Counties. Firemen built the facilities with materials donated by business and industrial establishments in the vicinity. Deputy Chief Albert J. Martin of Willimantic is Training Director.

Fire school publications issued during the year included Iowa's "Organization of Volunteer Fire Departments" and "Pump Operators Handbook," Ohio's "Learner's Workbook," and the "Ladder Manual" of Oklahoma A & M (See FIREMEN for September, 1954).

Gasoline transport fire which was one of the features of firemen's training in the 25th State Firemen's School at Texas A & M College. In many training programs in both United States and Canada emphasis was placed on actual combat of flammable liquid fires.

Highlights in the History of Fire Control

By Allen L. Cobb, Safety Supervisor, Kodak Park Works, Eastman Kodak Company, Rochester, New York, and Past President of the National Fire Protection Association.

From an address given at the dedication ceremonies of the Rochester, New York, Fire and Police Academy. (*See* FIREMEN *for Nov., 1954*)

THIS meeting leads to the dedication of the new fire college of the City of Rochester and it becomes my very pleasant duty to trace for you some of the history and the development of fire fighting, fire protection and fire prevention.

The first duty of a fireman is, of course, rescue, and the fireman of today uses ladders in his rescue work just as did his predecessors in Egypt 500 years B.C. The fireman's next job is to extinguish the fire and he has so far found nothing better than water properly applied, although there are other extinguishing agents for special purposes. Again, we must give credit to the Ancient Egyptians who developed hand-operated force pumps used in fire fighting in the Second Century B.C.

Fire fighting then was a volunteer matter and we may be inclined to think of the professional paid fire department as a rather new development. However, we find that the first full-time paid fire department of which there is any good record was organized by Emperor Caesar Augustus in Ancient Rome. It was really quite some fire department consisting as it did of seven cohorts, each of one thousand men. They were stationed at seven barracks conveniently located through the city and had the responsibility not only for fire fighting but of policing the area to prevent looting. They were equipped with hammers, saws, and, of course, the familiar fire ax. This is also the first fire department, of which we have record, equipped with pumps, hose and a water supply from a well-developed municipal system. In addition to ladders, they carried large pillows, the predecessor of the present-day life net onto which anyone trapped in an upper story could jump.

Incidentally, when we admire our modern stainless steel ladders, some of which will reach a height of 125 feet, it might be well to reflect that these same Roman firemen succeeded in an exhibition at the Colosseum in raising their sectional ladders to a height of 164 feet. This perhaps is enough to indicate that fire fighting by professional fire departments is not a new business. We might also take a brief look at fire protection in earlier days and note that in ancient Rome there was a law enacted to provide that each building should stand separately on its own lot with adequate clearance from surrounding buildings to prevent spread of fire from one building to another; that following the great fire in London (1666), specifications were developed for fire walls, specifications which still provide good fire walls and which are actually very little different than those in use today and specified by the standards of the National Fire Protection Association.

Skipping over the Middle Ages when things generally went backwards (including both fire fighting and fire protection), and coming to our own New York State we find that an ordinance adopted in New York City, which was then New Amsterdam, on January 23, 1648, required regular cleaning of chimneys and prohibited the building of plastered wooden chimneys. Perhaps to us the most interesting part of this ordinance was the provision of four worshipful fire wardens who were assigned the duty of inspecting every hearth and chimney in the whole city. There were teeth in that ordinance, too. It provided for a fine of three guilders for every chimney in need of cleaning and a fine of 25 guilders for every fire resulting from a defective or dirty chimney. Perhaps we could do with something like that in 1954.

However, in spite of these good beginnings there was a considerable period in this country when fire protection and prevention and their implementation through inspection has lagged.

This new country grew fast — some of it with the spectacular speed of the boom days of the Golden West, other sections with less speed but still with an urgency which did not permit long-range planning or much thought about the possible fire hazards. Wood was then plentiful and quick. Brick and stone were expensive and slow. It is not surprising that this became a nation of wooden houses. When brick was used for exterior walls the whole inside was of wooden construction. Not only did we use wood extensively, but we began to use it poorly, that is, from the fire protection point of view. Older structures were built of heavy timbers with mortised joints which was extremely wasteful of lumber but slow burning. It was, of course, a very slow method and it was not long before joisted construction was developed which made good use of wood from the point of view of structural strength and which made for much quicker and easier construction. But from the fire protection point of view that change was not to the good. Joisted construction burns so rapidly that it merits the description "quick-burning" given to it by fire underwriters and fire authorities. Brick buildings with the interior filled with wood-joisted construction were not much better than those of entirely wood or frame construction. The effect was something like a stove filled with kindling wood and the fact that the outside walls might not burn did not add much to the safety of those inside.

It was in this area of rapid development that our great cities grew "built to burn."

Our own homes are no places of refuge from fire, built as they are almost without exception of wood-joisted construction. True, the recent high cost of lumber and the availability of masonry units which are relatively easy to lay has resulted in a developing trend away from wood-joisted construction and we are finding an increased use of masonry for interior as well as exterior construction. Even with fire codes which provide for fire stops in hollow walls and for fire-safe chimney construction, it is still true that the average house, whether 70 years old or 70 days, is still literally a bonfire waiting for a match.

DURING this era of rapid development our fire departments grew by necessity. From earliest Colonial days men of good will have rallied at the cry of fire to save a neighbor's life and do what they could to save his home. One unique development which did not last very long was that of a private fire company owned by an insurance organization. Insurance companies of those days furnished each of their assured with a large seal or plaque which could be placed in front of the house to show which company insured that particular property. In the event of fire, the fire company such as that of the Philadelphia Contributionship, would trundle their hand-operated fire pump to the scene. If the house had a plaque showing four hands crossed, which was the seal of that particular organization, the fire company went to work with a will. If, however, it had some other seal or none at all, they would pack up their leather hose and fire buckets and go home.

There followed a growth of a remarkably American type of institution — the volunteer fire company. The country was young, healthy and tough and so were the firemen. In larger cities there was much rivalry and often the matter of beating a rival company in the race to the fire was more important than putting out the fire after they got there. Notwithstanding many faults, the early volunteers were men of courage and ability and undoubtedly had many rescues and stops to their credit. The volunteer is still with us and volunteer companies throughout the rural sections and throughout Monroe County continue their fire fighting in a more effective, if less colorful, way.

Fire apparatus continued to develop — the crude fire tub, or force pump, of the colonists became the hand fire engine of the last century with space for as many as forty men along its beams or brakes. Then there was the horse-powered pumper operated by four horses who walked around in a circle pulling the ends of crossbars and turning the vertical pump shaft. Most of us remember the horse-drawn steam fire pump — the wild dash to the fire behind a pair of dappled grays — the driver in his high seat, the nickel-plated boiler, the engineer clinging desperately while jostling on iron tires over rough cobblestones and the whole contraption showering the neighborhood with smoke and sparks. You may remember also a reciprocating piston pump shaking the whole engine until it seemed that it must certainly fall apart. Indeed, I can recall a fire in my home town of Portland, Maine, where brass bound Engine No. 3 shook so violently that the big side wheel fell off and the whole engine fell on its side in the street, shooting smoke, sparks, steam and water into the crowd in all directions.

It was a colorful and glorious era. It was one, also, of course, when wooden fire mains gave way to iron — when fire hydrants were developed — when municipal water supplies became reliable enough to be counted upon in great conflagrations and it was the era, also, of the development of the smoke-eater tradition. The fireman had to have the strength and courage to hold the heavy hose line in freezing conditions when water spray froze to his hands and all but encased him in a monument of ice. He had to be able to "take it" inside a smoke-filled building to carry the fight to the heart of the fire itself and, of course, the chief, himself, was in there, leading his men, showing by his own example that each man could stand more smoke and more heat than he thought possible. The idea, of course, was to get close to the seat of fire and drown it out by brute force of powerful hose lines at close range. It took strength and courage and it killed firemen.

Fire fighting today is becoming more professional. Firemen are learning how to use water and other extinguishing media effectively and economically so that there will be comparatively little damage beyond that of the fire itself. Firemen are learning that it is not necessary to kill off good men by breathing toxic gases. Fire officers are learning that the place of the commander is not in the front line. He has to plan his attacks, analyze the situation, place his equipment and forces where they will do most good and maintain communications. There will never be a lack of need of courage among firemen but the accent is very definitely shifting from brawn to brains. The fireman's job is becoming technical and he needs technical training if he is to do it well. That, of course, is one of the great reasons for the building of the fire college, the development of techniques so that the fireman of today can meet the problems created by electric power, by flammable liquids, by all the impact of modern industry, to extinguish fires with greater certainty, with less damage, and with must greater safety to himself.

SUPPOSE we turn for a moment to the development of fire protection engineering. Really active fire protection began in this country in 1835 with a cotton mill owner — one Zacharia Allen of Allendale, Rhode Island. Finding that the insurance of his cotton mill was extremely expensive, he planned to do everything then known in the way of fire protection in the mill, then apply for a lower insurance rate. Insurers were exceedingly reluctant to take on cotton mills because of the bad loss record and would give him no relief because of his fire protection measures. For example, the mill was built of stone, was of heavy timber construction and its wooden shingles were set in cement. Near each loom was a pail of water and brush which could be used to extinguish loom fires, a method still used today and the mill was maintained in a very clean and orderly state.

Mr. Allen finally succeeded in getting a group of mill owners together in a mutual insurance organization. This idea of mutual insurance was not new. There had been quite a number of mutual insurance organizations before this time, but this was the first one which was based upon an agreement among the owners to prevent fire through the use of all possible fire prevention measures. The idea grew rapidly in New England, resulting in the development of other similar companies which eventually banded together to form the Factory Mutual organization.

Later, stock companies became interested in this same approach and formed a similar organization — The Factory Insurance Association which operates on the same general plan — that of developing and using to the best advantage every proven method of fire protection and good construction.

Another organization is also active in this field from the insurance point of view — The National Board of Fire Underwriters, originally formed after failure of a number of fire insurance companies as a self-policing

(*Continued on page 30*)

hit of the year

ALL-NEW MACK

FIRE APPARATUS

Today's most modern fire apparatus, the all-new "B" Model Macks have won instant popularity in the brief time since they were introduced.

Handsome yet functional new styling... design that brings even greater simplicity of control... construction in the rugged Mack tradition... these are highlights of the new Mack firefighters.

Notable among their features is push-button control for both pump priming and pressure-volume operation. Even finer performance is provided by completely redesigned chassis with famous Mack Thermodyne® overhead valve engines.

Be sure to have a Mack representative show you how "B" Model Macks can bring to your department firefighting qualities that are unmatched by any other fire apparatus.

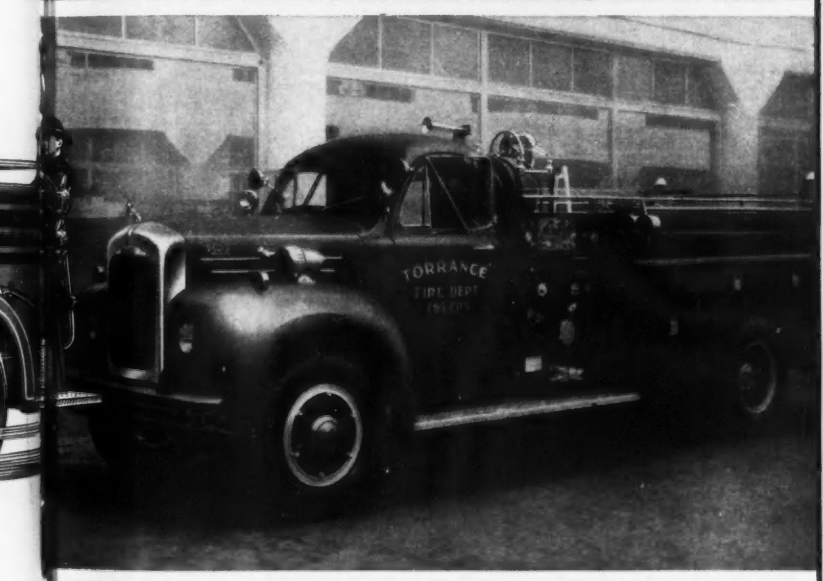
MACK MANUFACTURING CORPORATION, Empire State Bldg., New York 1, N. Y.

TRIPLE COMBINATION PUMPERS—500 TO 1250 GPM...SQUAD AND HOSE CARS...AERIAL AND COMBINATION LADDER TRUCKS

Belltown, Conn. B-85, 750 gpm triple combination pumper, 600 gal. booster tank, fire department air brakes. Semi cab.

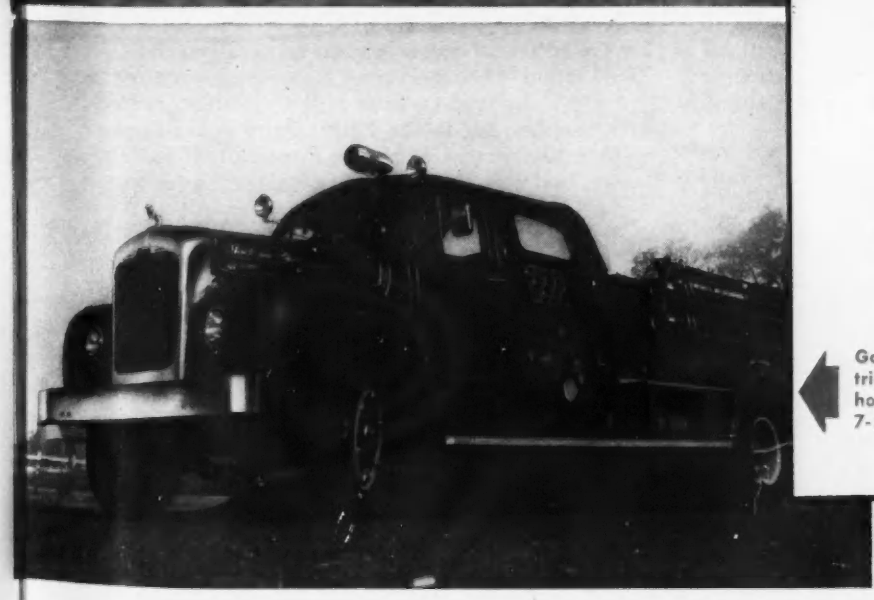
MACK "B" MODEL DELIVERIES OCTOBER 30th

North Patchogue, L. I.
Malvern, Pennsylvania
Wilmington, Delaware
Dover, Delaware
Pompton Plains, N. J.
Orange, N. J.
Lyndora, Pennsylvania
East Meadow, L. I.
Southwest Greensburg, Pa.
Wyckoff, N. J.
Rutherford, N. J.
Randallstown, Md.
Sandy Spring, Md.
Green Tree, Pa.
Jeannette, Pa.
Memphis, Tenn.
Arnold, Pa.
Lexington, Mass.
Westville, N. J.
Missoula, Mont.



Torrance, Calif. B-125, 1250 gpm triple combination pumper. 4-stage centrifugal high-pressure power takeoff driven pump. 3-man coupe cab.

Hempstead, N. Y.
Gretna, La.
New Kensington, Pa.
Lansdale, Pa.
Rockville, Md.
Kobe, Japan
Easton, Md.
Juarez, Mexico
Conshohocken, Pa.
Libby, Mont.
Fayette County, Lexington, Ky.
Hereford, Md.
Arlington, Mass.
Marblehead, Mass.
Lansdowne, Pa.
Youngstown, Ohio
South Amboy, N. J.
Belmont, Mass.
Silver Hill, Md.
Morris, N. J.



Garden City Park, N. Y. B-85, 750 gpm triple combination pumper. Side-mounted hose reels. Individual pressure gauges. 7-man canopy cab.

2810

Get 'em on Separate Circuits!

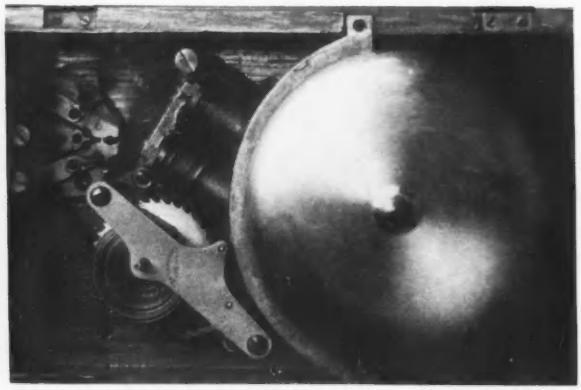
FIRE departments are expected to set a good example of fire safety in their communities and to demonstrate knowledge of accepted good practice standards. However, during one of the recent hurricanes, a 4600-volt primary service came down on an overhead circuit of a municipal fire alarm system serving bells in homes of individual call fire fighters of a New England community. Several fires started in these homes, but fortunately they were discovered and extinguished before major damage occurred.

This occurrence points to the danger of alarm devices which are not protected in accordance with the requirements of NFPA-NBFU Standard No. 73, "Municipal Fire Alarm Systems." In this instance the gongs were on a combination box and alarm circuit which extended inside firemen's homes without current overload protection or readily available means of quickly by-passing the gongs and restoring service.

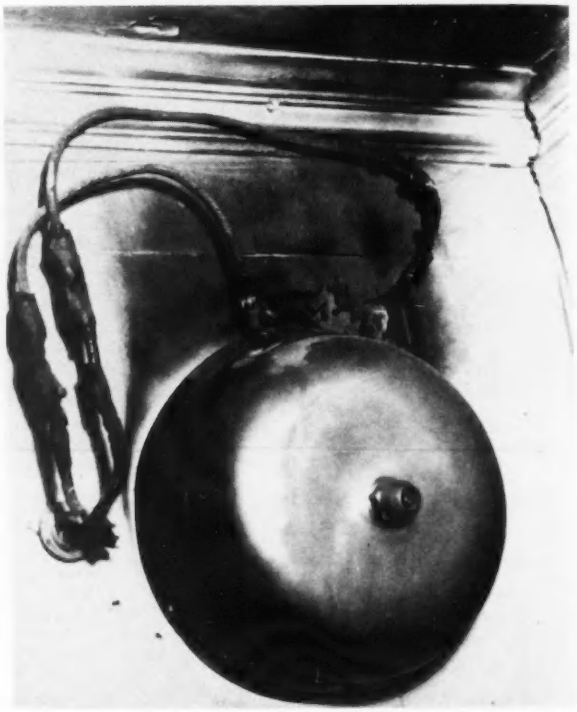
Standard 73 recommends that sounding devices in firemen's homes or places of business "be connected by a special normally-closed circuit or circuits controlled by a relay or relays responsive to the box circuits and located preferably at headquarters. In any event all portions of box circuits and alarm circuits, including relays connected therein for the control of special circuits, should preferably be located at points accessible at all times for purposes of maintenance and test."

Other provisions of the standard that were ignored in this instance are: "At fire stations or other buildings, each conductor entering from lines partly or entirely aerial shall be protected by an arrester complying with Sec. 205–1, paragraph 2 as follows: 'By an arrester, which at a temperature of 25 degrees C, with a current of 5 amperes and a potential of not more than 400 volts DC, will dependably discharge 10 times without permanently grounding the circuit; which will not discharge at a potential of less than 200 volts DC.' "

Also: "Wires inside buildings, including those from point of first attachment, shall be in conduit, electrical metallic tubing, metal moulding, or raceways. Installation shall be in accordance with the National Electrical Code. Wires shall be installed as far as possible without joints. Splices will be permitted only in junction or terminal boxes. Wire terminals, splices and joints shall conform with the National Electrical Code."



Coil windings in this fire alarm bell in call fireman's place of business started to burn from high voltage short in fire alarm circuit.



Improperly installed fire alarm bell in fireman's home started fire.

Since the line troubles occasioned by the hurricanes, some fire departments are installing 3 ampere fuse blocks and cut out switches to protect individual gongs in firemen's homes, but the standard does not recommend fuses except at places where operators are continuously on duty. Improper installation of fuses and switches may endanger functioning of entire circuit.

The experience of the New England town has been reported to show the importance of following accepted good practice standards which have been prepared by experts who rely upon years of experience in the field. Such technical standards were adopted and published by the NFPA after years of study and discussion. The 1954 edition of Standard No. 73 is available for 35 cents per copy. A complete list of NFPA standards is available upon request to the NFPA Publications Department, 60 Batterymarch Street, Boston 10, Mass.

Book for Resuscitator Squads

THOMAS S. WARD, Supervisor of Fire Training, Department of Education, 721 Capitol Avenue, Sacramento, California, has announced publication of a new training text entitled "Emergency First Aid and Life Saving for Resuscitator Squads," by Carl J. Kistle. This 88-page mimeographed document is available from that office at a cost of 40 cents per copy. It discusses methods of artificial respiration, care and use of resuscitators and inhalators, poisons, shock, diseases and physical ailments or injuries which resuscitator squads are likely to encounter. It also discusses the California law on First Aid, suggests records and report forms and equipment which would be useful to resuscitator squads.

Long Beach Fire Department

(*Continued from page 13*)

The monthly exams are followed by a final written exam of 150 questions and the chief officers responsible for the approval of probationary firemen watch their training records with intense interest. If a man fails to pass an examination he is visited by a chief who seeks to determine the reason for failure.

In the training program each man is given a mimeographed outline to follow to save lost time in copying blackboard instructions. Each man also makes up his own study book which is graded for credit. Chief Bryan sends an evaluation sheet to headquarters regarding each man.

Probationary men are given reading assignments after each day's work, and in the morning they are given a 25-question review on the previous day's work. At the end of the period there is a 200 question final examination covering the basic training which is designed to provide a trained fire fighter capable of operating any equipment in the department.

Company drill schedules include required reading assignments such as new general orders. A quiz is given during drill periods. Incidentally, the general order book is reviewed annually by Deputy Chief Head and superannuated material is removed and destroyed.

In Long Beach the general orders outline the official operating procedure and supplement the rule book issued in 1952. The general order book is arranged by chapters and topics. Information of a temporary nature is issued as "Memorandum for Information" which is dated or designated "until revoked."

During fire company drills each man is graded by the training officers and the company is given a grade as an operating unit. The following grading schedule is used:

A	95–100
B	88–94
C	81–87
D	75–80
E	Below 75

In general, a good man will score 90. If a man is consistently below this figure, the officers attempt to determine and correct the reason. Fire companies are required to hold at least 7 drills a month on different subjects.

City of Morris Fire Department. All 3 pumpers are WATEROUS equipped.

Dependable since 1886...So *what?*

● For 68 years, WATEROUS has built a reputation for *dependability*... dependable products and dependable service support. Here's what WATEROUS dependability means to the 4000 citizens of Morris, Minnesota... and what it can mean to *you* as a prospective purchaser of fire apparatus.

Back in 1929, Morris bought a WATEROUS fire truck. Eight years later it added a second truck... again with a WATEROUS pump.

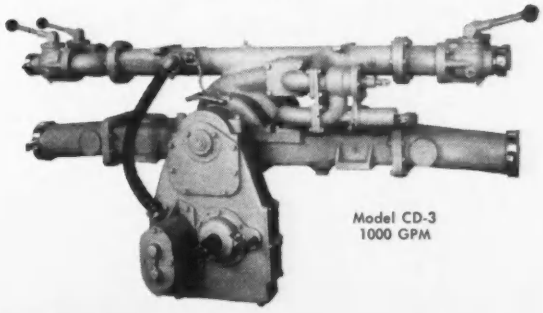
"During all these 25 years we've never had a bit of pump trouble," says Chief Jack Meyers. "You can understand, then, that we were pleased to accept delivery of our new 1000 GPM WATEROUS-equipped pumper."

After delivery of the new truck, Morris decided to send the original 25 year old pumper in for a check-up and overhaul with factory replacement parts, which were readily available. Shown at the right in the above photo, this veteran truck is now back on the job... *still meeting Underwriters requirements* and ready for many more years of service.

The experience of Morris is typical, for many even older WATEROUS pumps are still on the job, giving their communities efficient, dependable service.

If your Department is in the market for new pumping equipment, investigate the WATEROUS line. For details, write WATEROUS Company, 42 East Fillmore Avenue, St. Paul, Minnesota.

MEMBER FAM FIRE APPARATUS MANUFACTURERS ASSOCIATION



Model CD-3
1000 GPM

Waterous
DEPENDABLE PUMPS
SINCE 1886

"Spelling Out" the Drill Routine

A BASIC principle of hospital fire safety is proper instruction of nurses, attendants and other personnel. These persons must have an established routine to follow if fire occurs so that they may accomplish the evacuation of patients and visitors with the same thoroughness they apply to their chosen profession. Fire department personnel can do much to encourage the establishment of proper fire exit drills in their communities' hospitals.

A good approach to "spelling out" these fundamentals is shown in the fire safety plan of St. Elizabeth's Hospital in Hutchinson, Kansas. This plan (shown at right) was submitted to FIREMEN by Hutchinson's Fire Chief F. R. Dimond. Sister Mary Roberta, Administrator of the hospital, recently was a featured speaker at the 25th Annual Kansas State Fire School held in that city.

Note the responsibilities which are detailed for personnel in the fire drill routine. Signals and communications are channeled to the switchboard operator, while other persons are charged with spreading the signal for particular hospital areas. As shown in the bottom of the plans revisions have been made recently to provide for visitors and for patients relying upon breathing apparatus. Supervisors and nurses also have specific duties to perform in the drills. The fire safety plan was prepared with consideration for the recommendations of the Hutchinson Fire Department.

Readers who want further information on the need for fire exit drills in hospital and for other recommendations for fire safety are referred to the new (1954) Third Edition of "Hospital Fire Safety", published by the NFPA. (176 pages, price $2.50 per copy). This publication contains detailed reports of hospital fires, statistical analyses, together with pertinent extracts from the Building Exits Code and other NFPA standards which are useful guides for hospital fire safety.

Fire Safety Plan

St. Elizabeth Hospital
Sister Mary Roberta, Administrator

Suggestions for Fire Prevention Program
or
Fire Drill — after meeting with the fireman for purpose of planning Drill

1. Report fire to switchboard operator — (in case of actual fire give location of fire, for example, "2nd Floor, West end"). Switchboard operator in turn gives report and location to fire department — (Phone number is plainly posted on switchboard)
   Switchboard operator carefully records times — (time the drill is announced and time the drill "all clear" signal is given)
2. Fire alarm signal or drill signal will be given by paging or calling:
   "Signal 86-2nd Floor-East end"
3. Day Fire — Switchboard operator page signal then dial No. 36 (Administrator) For greater speed in spreading signal the Bookkeeper will dial No. 65 (Nurses Home), No. 35 (Boiler Room), No. 69 (Pharmacy)
   Cashier will dial No. 61 (Pediatrics), No. 67 (Nursery), No. 62 (Physical Therapy)
   Record Librarian dial No. 49 (Lab-X-ray), No. 54 (Kitchen)
   You will notice the location of the fire has been announced — this is so employees will not need to use the phone to call to inquire where the fire is — thus, leaving the telephone open for *orders to be given and received.*
4. Night Fire — Switchboard operator to page signal, for example, "Signal 86-2nd Floor, East end" then dial No. 65 (Nurses Home) No. 61 (Pediatrics), No. 54 (Kitchen), No. 26 (Convent)
5. All office employees to go to switchboard — to relay messages should the switchboard go out.
6. Auditorium to be center for "Stand-By" help (unless fire is in their respective departments) — stand-by help will come from Kitchen, Laundry, Boiler Room, Lab, X-ray and House-keeping Dept. *Nurses from the Nurses Home go to their respective floors. One key person* is responsible for receiving and giving orders.
   Supervisors and nurses will stay on their floor — upon hearing the signal, nurses from each floor will report to her Supervisor should she be absent, to the head nurse — *Shutting all Windows, Transoms, and Doors enroute to her Supervisor.* (Supervisor or Head Nurse should keep in mind that she will be expected to make a written report — to be kept on file — of what took place during the drill). Supervisor might have one of group to name ambulatory patients, patients who would need to be carried on mattresses, have one go to shut all windows left open after group gathered (keep count), etc.
7. Should evacuation become necessary Switchboard Operator or Supervisor should make sure she has patient list before leaving her post.
8. Stress point to personnel that calmness is important during drills.
9. Questions asked by patients during the Drill should be answered tactfully.
10. Should fire drills be conducted in such a way that patients would not know a drill was going on?
    Preferably yes, however, should a patient learn of the drill and ask questions concerning the drill, the answer they receive will greatly determine their reaction. If they are answered in a calm, tactful manner, the fact that a fire drill is going on will not excite the patient, but most generally would give the patient a feeling that he or she would be carefully protected should a fire ever occur. The drill would give the patient a feeling of security.
11. Posters, showing the floor plan of each Division and the location of the fire extinguishers, are to be exhibited in the different divisions periodically. *Know the Location of Your Extinguishers.*
12. The Switchboard Operator and her helpers will announce the all clear signal by paging or calling "Signal 86 — Cleared"

The following additions have been made to this fire drill.

1. Pharmacy and P.T. should also be called by phone, since paging system does not reach these departments.

2. *Visitors* during a drill, should be cared for by the employees. A visitor should be asked to stay with the patient with whom he is visiting. Let him know if it is a fire drill or fire. Inform visitor that he will be evacuated with patient, should it become necessary.

3. Lungs to be put on manual pump immediately (someone to be with the patient constantly) and if necessary, the lung to be pushed through Pediatrics and out onto the outdoor porch — away from the smoke and fumes.

4. The one who notices the fire is to report the fire to the switchboard operator at once.

5. The switchboard operator to give signal very distinctly. Supervisors need not observe time the signal is sounded.

WOOSTER Control-Flo PATENTED APPARATUS VALVE

NEW FEATURES

Means easier and better operation at all working pressures . . . under all fire-fighting conditions!

The Wooster Control - Flo's popularity was proven when department after department adopted it as standard equipment. Now, new design developments and new operating features make it even more useful, versatile and trouble free.

Measure valve performance by any standards you wish — make a feature-by-feature comparison with any valves you are now using and you'll agree that Wooster Control-Flo Valves belong on your apparatus.

FLOATING BALL SEAL is self lubricating — easy to turn at any pressure, yet absolutely leak - proof. Indefinitely holds priming vacuum.

FULL ROUND WATERWAY reduces turbulence at all open settings. Guards against pressure loss at the nozzle.

RUGGED, POSITIVE BRAKE locks ball valve in any open position. Releases with a simple turn of the throttle handle.

CONVENIENT SPLINE HANDLE permits any open-close positioning of the throttle handle. Works anywhere on the pumper without costly changes.

TAKES PRESSURE OR VACUUM IN EITHER DIRECTION. Use it for any pumper application. Holds prime on the suction side.

AVAILABLE IN ALL THREAD, FLANGE AND SWIVEL COMBINATIONS. Fills all valve replacement requirements as well as new apparatus needs.

CONTROL - FLO SIAMESE VALVES are also available. Incorporate all the same desirable features found in the single valve unit.

Don't specify new or replacement apparatus valves until you have inspected and tested the Wooster Control - Flo valve. Contact your Wooster Brass representative or write direct.

WOOSTER BRASS

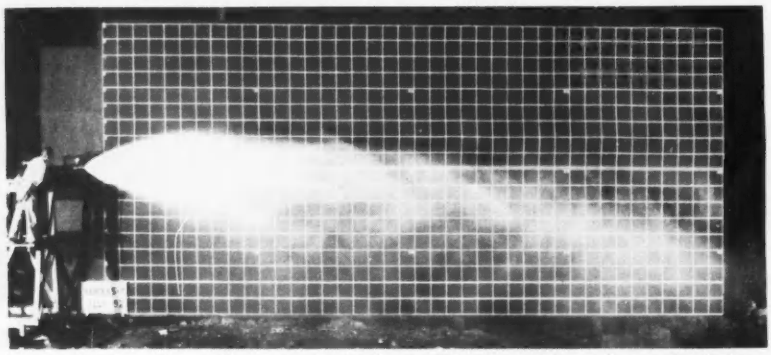
WOOSTER, OHIO

A DIVISION OF THE FYR-FYTER COMPANY

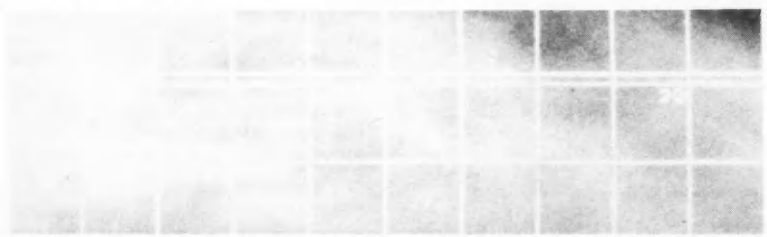
Fog Nozzle Studies at Uni

AS REPORTED in the October issue of FIREMEN magazine, the studies of fire department fog nozzles, being conducted at the University of Maryland in College Park, are nearing completion. These studies are being conducted by the University for the Fire Department Equipment Committee of the National Fire Protection Association and the International Association of Fire Chiefs, under the direction of the Sub-Committee on Fog Nozzle Studies, in cooperation with the Federal Civil Defense Agency and

Robert C. Byrus (*left*) and Professor of Journalism Al Danegger examine some of the cameras and special lighting equipment used to photograph water fog patterns.

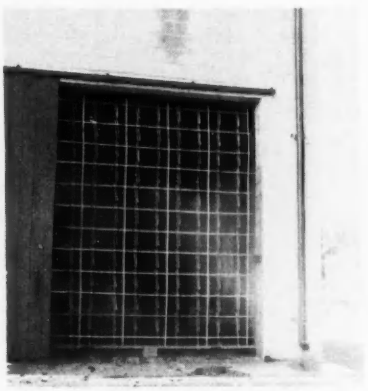


Instructor Curtis Larrimore of Maryland's Fire Service Extension watches a fog nozzle discharge against measured backdrop. Photographs of patterns were taken at dusk when the air was still. Equal illumination was obtained for each study and identical development and printing processes were used for all pictures.



Enlargement of fog pattern in picture above illustrating distribution of droplets between the 11- and 20-ft. markers on the backdrop. Four floodlights provided lighting for the night photography which was equal to 100 times that of sunlight, while camera shutter speed was 1/10,000 per second.

This tank truck was used as a source of water supply. Sight gage at left end was calibrated in 5-gallon intervals. Stop watch was used to time duration of flow through nozzles, thus amount of level drop in sight gage permitted calculation of gpm flow.



Other water fog pattern studies were made inside a building with this series of glass tube receptacles. Doorway measured 10 x 12 feet and tubes were placed with 1-ft. between centers. Large nozzles discharged at 12 feet from this device while small nozzles discharged at distance of 6 feet. Making these studies indoors avoided effects of wind conditions.

Reaction of nozzles was measured on this scale device. As water causes thrust on nozzle, reaction is carried through V-joined arms below which press needle point on scale. Nozzle pressure was regulated by gate valves and angle of discharge pattern established by special calipers, measuring from point of emergence to 6 inches in front of nozzle. The 33.5-lb. net weight of this assembly was considered in thrust calculations.

s at University of Maryland

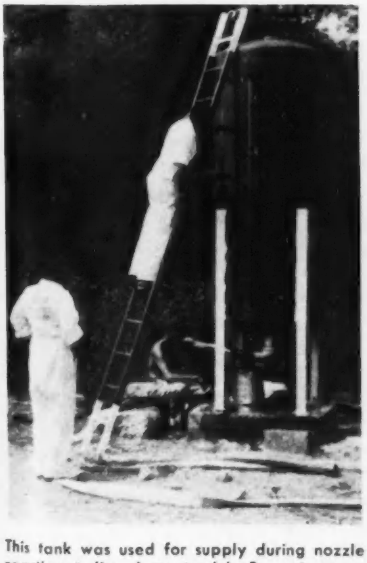
the U. S. Department of Agriculture, Forest Service.

The sub-committee is headed by Robert C. Byrus, member NFPA Committee on Firemen's Training and Director, Fire Service Extension at the University. Instructors and students at the University and Maryland fire fighters have participated in the studies.

Most of the nozzles made by U. S. manufacturers have undergone the series of studies, which include measurement of gpm flow under established pressures and (for adjustable nozzles) nozzle settings; straight stream flows; nozzle reaction; patterns of discharge, and distribution of water concentrations at fixed distances from the nozzle. Pictures and captions on the page at left help to explain how some of the measurements were taken. The press photography department of the University generously cooperated to obtain photographs and develop the numerous pictures under identical conditions to permit fair evaluation of the nozzles.

Three Civil Defense portable pumps were operated from a nearby creek to supply a tank truck where accurate water volumes could be

(*Continued on page 34*)



This tank was used for supply during nozzle reaction studies. Instructor John Bryan is examining calibrated sight gage. Gage was marked with wax crayon after tank was filled to capacity, then water was withdrawn at 5-gallon intervals, which is being done by man seated below tank.

"Choice for Quality the World Over"

THERE'S NO *Catch* TO THIS—

INDIAN

FIRE PUMPS

ARE BEYOND COMPARE—

We don't fish for compliments, but there must be a reason why so many users of **INDIAN FIRE PUMPS** write us they could never get along without them.

For grass and brush fires, fires in upholstered furniture and mattresses, fires inside buildings, fires in trash containers and on roofs **INDIANS** have no equal. **INDIANS** are easily cleaned — attractive on the truck.

New truck of Half Moon Bay built by Coast Apparatus Inc., Concord, Cal. (Note **INDIAN FIRE PUMPS** mounted on running board.)

A FIRE CHIEF WRITES:

"We use **INDIAN FIRE PUMPS** for grass fires and cleaning up small fires after a large fire. We also leave them on the scene of a fire so if a small fire starts, the owner can put it out. **INDIANS** are handier and always ready. The valves never stick. One **INDIAN** can do more than six men with wet sacks on a grass fire."

Chief M. F. Brookshin, Hamburg, Iowa Fire Dept.

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CAIRNS LEATHER FIRE HELMETS

The "NEW YORKER" — No.5A — REGULATION

A National Standard For a Hundred Years

The "original" of all leather helmets, the "NEW YORKER" was introduced by CAIRNS in the early 1800's and has steadily been improved in design and material throughout the years since. Its selected, specially-tanned, top-grain steer hide leather and its time-tested design make the "NEW YORKER" the safest, toughest, strongest most durable helmet on the market — approved and accepted by the largest, most efficient fire departments in America.

The CAIRNS LIFE-GUARD LINE also includes other leather helmets, in other styles and weights — as well as helmets in aluminum and FLINT-FLEX plastic, in regulation and drop-brim styles. We supply everything a fireman needs for his personal equipment.

Write for Catalog 340 showing everything a fireman needs for his personal equipment — together with Department Record Books, Secretary's Books, and printed forms.

CAIRNS & BRO., Inc. - Allwood, Clifton, N. J.

SINCE 1836

Hurricane Damage

AS HAS been brought out in several meetings of fire chiefs' associations the three hurricanes which swept the East Coast in the Fall of 1954 have created serious fire hazard problems in wooded areas. In Massachusetts alone 75 million board feet of lumber was felled by the heavy winds, resulting in many blocked roads to the interior of forested areas.

Fire departments and state foresters can take advantage of forthcoming winter weather to conduct controlled burning of "slash" and to open existing roads in preparation for the dangerous fire seasons in the spring and summer of next year. Felled timber also is a breeding place for destructive insects which can penetrate healthy growths. Timber which can be salvaged must be removed promptly before deterioration becomes severe.

"Fireman of the Month"

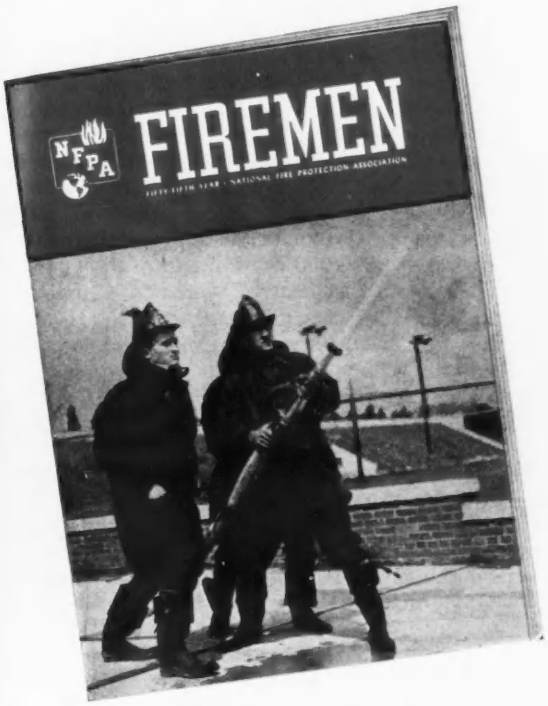
EACH month the Montgomery County, Maryland, Volunteer Firemen's Association has been selecting some member of a fire department in the County to receive a "Fireman of the Month" award. The award is a bronze miniature fire helmet, suitably engraved, made by Ladderman Frank H. McDonough of the Boston, Mass., Fire Department and distributed by the Norrington Company, Rehoboth, Mass.

Recently three firemen received such awards from businessmen who sponsor the radio program "Fire Alarm," broadcast by Station WGAY in Silver Spring. (See FIREMEN for May, 1954.) In uniform above are (left to right) Lt. Vernon W. Dantz, Sandy Spring Fire Department, and Philip R. (Bob) Vernier and Jim Hansen of the Silver Spring Volunteer Fire Department. Others in the picture include (left to right): Joseph L. Brechner, vice president of WGAY; Gene Glasgow, advertising representative; Wm. M. Wright, Frank L. Hewitt, Jr., and R. L. Senseman.

Are ALL *of your fire fighters receiving* FIREMEN?

IS YOUR fire department receiving SIX (6) subscriptions to FIREMEN with its NFPA Fire Department Membership? Are these magazines being distributed properly to the officers and men in your department? Have you asked how many members in your department would like to receive extra subscriptions to FIREMEN during the coming year for only $1.25 each? Are the other publications that are included in your membership being made available through your department library?

This is a good time to "poll" your fire fighters and to make certain that your department is receiving the full benefits of its membership in the NFPA. Here is an outline of what NFPA Fire Department Membership can bring to you and your fire department:



If you are a member of the uniformed fire service, membership will cost $12.50 per year and will include subscriptions to FIREMEN, to the monthly *Fire News*, to the NFPA *Quarterly*, and also a number of important publications which are made available to members from time to time. You will also receive a handsome membership certificate, suitable for framing.

NFPA Fire Department Membership is available to individuals in the uniformed fire service, and to any paid, call, or volunteer fire department. The "six-copy" plan of membership is available only to municipal fire chiefs and fire departments.

If your municipal fire department enrolls as a unit, or if you are a municipal fire chief, then SIX (6) subscriptions of FIREMEN will be included in the membership, together with the above publications, for the same $12.50. If you desire to have more than six subscriptions sent to your department, then additional subscriptions will cost $1.25 each.

Industrial fire brigades and other members of NFPA may secure subscriptions to FIREMEN for $1.25 per year in addition to regular membership dues.

Why not make certain that all of your fire fighters have opportunity to receive FIREMEN? Merely fill out the application blank below and mail it to the NATIONAL FIRE PROTECTION ASSOCIATION, 60 Batterymarch Street, Boston 10, Massachusetts.

CLIP ALONG THIS LINE AND MAIL TO ADDRESS BELOW

F-12-54

NATIONAL FIRE PROTECTION ASSOCIATION
60 Batterymarch Street, Boston 10, Mass., U.S.A.

Application for Fire Department Membership in NFPA

Please enroll .....

☐ Individual (Chief)
☐ Municipal Fire Department (Paid)
☐ Municipal Call or Volunteer Department or Company
☐ Industrial Fire Brigade (membership fee $12.50, plus $1.25 per subscription of FIREMEN per year.
☐ Government Installation Fire Departments — Membership fee $12.50, plus $1.25 per subscription of FIREMEN per year.

City or Town .....

Mailing Address .....

..... **State or Province** .....

Fire departments and chiefs of such departments joining NFPA should send mailing list for 6 subscriptions to NFPA FIREMEN magazine. Additional subscriptions cost $1.25 each.

Enclosed $12.50 (Check or money order) ☐ **Please send bill** ☐

Highlights in the History of Fire Control

(*Continued from page 19*)

agency within the industry to make sure that the insurance companies operated under good business principles, did not over-extend themselves and maintained adequate reserves. The National Board also became interested in preventing loss by fire and formed its engineering division which has contributed a great deal to municipal fire protection, the development of standards for municipal apparatus, the survey of cities for water supplies and like matters.

At about 1874, fire protection made one of its biggest forward steps with a development of the automatic sprinkler. It is hard to say just who invented the sprinkler as the idea occurred to a number of men in different countries at about the same general time. One sprinkler of considerable importance was that developed by Mr. Henry S. Parmelee of New Haven, Connecticut. This head was patented in August 1874. I think it is rather significant to note that Mr. Parmelee was a piano manufacturer and fully cognizant of the damage which would be created by unintentionally spraying water around his premises. There are still many people today who do not fully appreciate what Mr. Parmelee recognized from the very beginning, that the ruining of even quite a number of pianos by water was much to be preferred to having the whole factory burn down by fire. Of course, in the years since 1874 the automatic sprinkler has increased in reliability so that accidental operation is now extremely rare, in fact, virtually at the vanishing point. In addition, it has continually developed in effectiveness and within the last few years a new type of sprinkler has been developed which has increased the effectiveness of the standard head tremendously, resulting in much more effective use of the available water supplies and prompt extinguishment with less damage.

It is safe to say that no single device has saved more lives or prevented the destruction of more buildings by fire than the familiar automatic sprinkler.

Industry, however, has grown more and more complicated. The introduction of electric power made it necessary to have standards for electric devices and this was one of the principal factors which resulted in the founding of the National Fire Protection Association 58 years ago. Insurance companies, regulatory officials, organizations interested in fire protection and many individuals joined to form the National Fire Protection Association, which is the country's authoritative standards-writing body in the field of fire protection. Organizations such as the National Board of Fire Underwriters are members and cooperate actively with the NFPA. In fact, the standards of the National Board are actually those prepared by the National Fire Protection Association which has, of course, become the meeting place for all those organizations, industries, and individuals who are seriously concerned with the problem of fire protection and fire fighting. I have had the great privilege and honor of serving as President of NFPA and working in many of its technical committees.

During the last few years developments in fire protection have occurred with almost bewildering rapidity. The extended growth of the petroleum industry, the use of flammable liquids throughout the chemical industry have brought many problems which have resulted in the development of fire protection systems including foam, additives to water, water spray, dry chemical, and carbon dioxide gas. The use of magnesium and other light metals has resulted in the unusual fire problem of metals that burn, some with explosive intensity, and has necessitated the development of special extinguishing media. The development and extensive use of liquefied petroleum gases has made necessary the development of elaborate standards for the safe installation and use of these gases.

The whole problem of fire hazards is a technical matter of appreciable magnitude and has far outdistanced the man with a hose that we knew as a fireman at the turn of the century. It has become more than obvious that the fireman has to go to college — a technical college — that there is a vast amount which he must learn, and that it is no longer possible to do it by the old apprenticeship method by working up through the ranks. It is for this reason that the facilities of Rochester's new fire college are so urgently needed.

At the same time, it is becoming more and more appreciated that the fireman's job is not simply to put out fire when it does occur, but to do his best to see that fires, with their threat to life and their destruction to property, do not occur. The technical job of fire prevention is becoming one of the fireman's responsibilities, and, of course, in order to operate effectively in this field, he needs to know a great deal about building construction, about electrical installations, about the hazards of flammable liquids and gases, about the tens of thousands of materials used in industry, some of which may present fire hazards and others which may present hazards to life from toxic gases in event of fire within the building. It is to help him in tackling this arduous assignment that Rochester has established this fire college.

It should result in a closer liaison between the operational fireman on one hand and the professional fire protection engineer on the other — the man who arranges the equipment of a new building to minimize fire hazards, who assists in determining details of the building construction and who lays out the fixed protection on which the building or the process must rely for its fire safety. There has sometimes been some difficulty because of the failure of the fire fighter to appreciate the value of built-in fire protection devices, the automatic sprinkler, built-in foam system, etc., and to rely on his own resources. There has also been some failure on the part of fire protection engineers to appreciate the way in which the work of the firemen can be integrated with his own approach to fire safety and the fire college should result in a better mutual understanding and appreciation on the part of both groups. Speaking as a professional fire protection engineer, I am most happy to see this development in Rochester and can appreciate to the full the advantages it will bring not only to industry and mercantile establishments but to the individual home owners of Rochester and all of Monroe County.

Wisconsin Fire Council

A COUNCIL of Wisconsin Firemen's Associations has been formed, including seven associations which represent 208 member fire departments. Chief Henry Geisler of Tomah, Wisconsin, was host to the Council at its first meeting in October. Other Wisconsin fire chiefs to serve as officers of the new Council are Chief Joe A. Doherty of Butler; Chief Norman Spiering of Mayville; and Chief Louis J. Arnts of Lyndon Station. Norton Ames and Donald Bunnell, Oregon, Wisconsin, are the temporary President and Secretary respectively.

The charter member list includes:

Central Wisconsin Firemen's Association, Dodge County Firemen's Association, Eastern Wisconsin Firemen's Association, Jefferson-Waukesha County Firemen's Association, St. Croix Valley Firemen's Association, South Central Wisconsin Firemen's Association and the Southern Wisconsin-Northern Illinois Firemen's Association.

Forest Fire Control Manual

THE Northeastern Forest Fire Protection Commission has produced a 268-page paper bound reference manual for forest fire control officers concerned with the organization and training of personnel. The first section of the mimeographed manual is devoted to operation and includes discussion of functions and duties of fire fighters and their commanders during forest fires. There is also description of the "plans unit" and the service and supply problems in large-scale forest fires. The second portion of the book is devoted to techniques of instruction and training of fire crews. There are also some map signs and symbols, a guide showing transportation data such as vehicle capacities and expected rates of travel, gasoline and oil requirements, and tables of suggested equipment and supplies for organizations concerned with forest fire problems.

The Commission includes the New England States and the State of New York in a large-scale mutual aid system for forest fire fighting and protection. Copies of the manual may be obtained for $1.50 each from the Northeastern Forest Fire Protection Commission, Patlen Building, Chatham, New York.

Say you saw it in FIREMEN

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Wishes You A

Merry Fire Safe Christmas

and Prosperous New Year

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We manufacture both rubber and fabric fire coats. In our vast selection of materials you will find the type of fabric exactly suited to your climate and needs. For complete information on our full line of firemen's protective clothing, see your Midwestern dealer. A letter to the factory will also bring you literature and material samples for your inspection.

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Manufacturers of the Famous MACKINAW Coats

Strictly **FIRST TEAM!**

First in *performance*
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The Federal Beacon Ray light and the Federal model "Q" siren can give your fire truck "first team" support. Doing a job of dual warning, the Beacon Ray light protects by projecting a highly visible beam of red light to the front, sides and rear, "all around" the truck, while the model "Q" siren screams out a powerful, long range audible warning that penetrates for miles ahead. This popular team of warning signals gives you complete protection from heavy traffic hazards.

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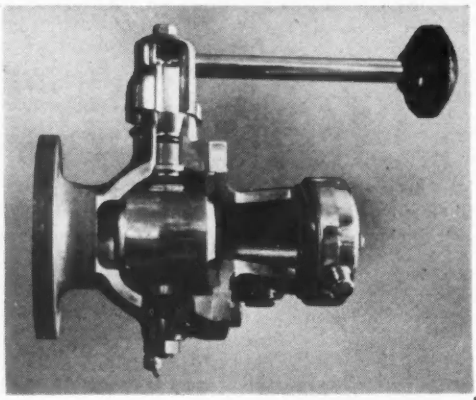
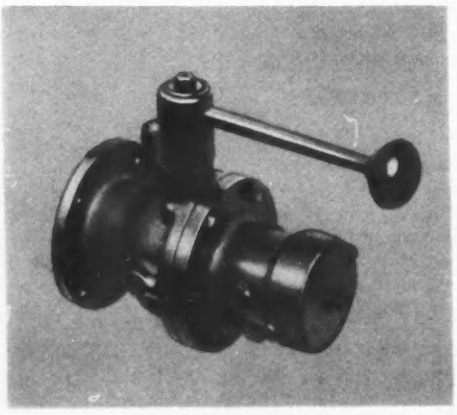
HALE TYPE "BL"
Discharge Valve

This popular HALE ball-type BL Valve is not only furnished on new HALE Pumps, it is also available for easy installation on ALL Hale Fire Pumps now in service, regardless of age.





Above — View of BL Valve cut away to show internal construction. Valve is in open position with cap on.

Note: New revised Bulletin No. 293 now available covering complete details. Send for yours today!

Hale Fire Pumps are built in all standard capacities.

★

HALE FIRE PUMP CO.

CONSHOHOCKEN, PA.

Merry Christmas and Happy New Year

Window Marker

Syracuse, New York, fire fighters are placing this decalcomania on appropriate windows of industrial and mercantile establishments. Outer circle of the marker is 7 inches in diameter. Its distinctive appearance not only helps to give an admonition to occupants of such buildings but also is an eye-catcher for fire department personnel who post the marker at windows which would provide best spotting of aerial ladders and entry into the building if fire should occur.

Question for Readers

A READER of FIREMEN wants to hear from any fire departments who are stationed in the same building with a fraternal, social or civic organization. Seems that his department has differences with such an organization housed in the same building. He wants to know how other departments have resolved such questions as joint financing, maintenance and social activities.

Any constructive suggestions may be sent to FIREMEN magazine and will be forwarded to the fire dept.

Membership Report

NFPA Welcomes: The following fire chiefs and fire departments. Current NFPA Fire Department Membership totals 2,153 fire departments and 26,035 men.

Illinois: French Village Volunteer Fire Fighters, Inc., East St. Louis.

Indiana: Ogden Dunes Volunteer Fire Department, Gary.

Massachusetts: Westwood Fire Department, Westwood.

Michigan: Oak Park Department of Public Safety, Oak Park.

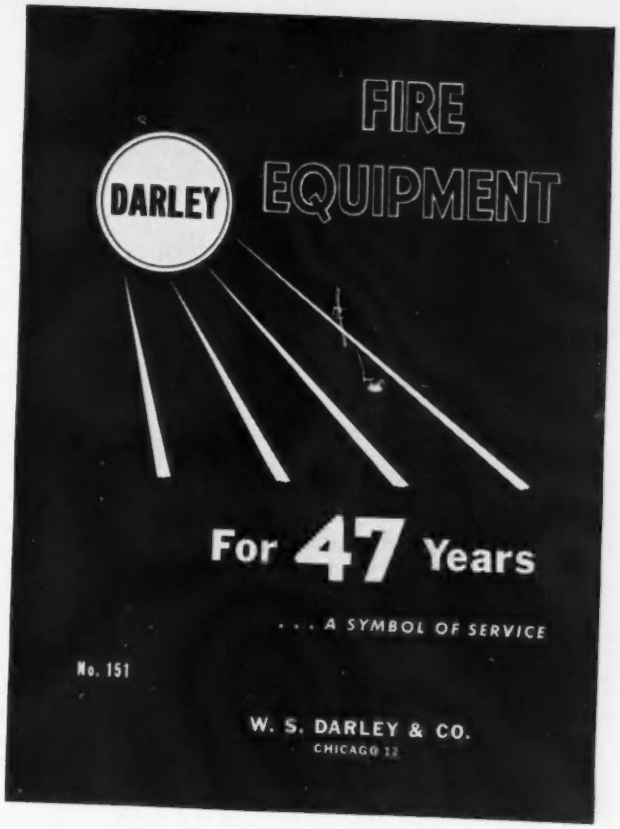
Minnesota: Chief Roman H. Zwack, St. Joseph Fire Department, St. Joseph.

Missouri: Chief Raymond Melton, Carrollton Fire Department, Carrollton.

Ohio: Chief Jack Maynard, Chardon; Highland Heights Fire Department, Cleveland.

Oklahoma: McAlester Fire Department, McAlester.

Write Today For This NEW Catalog



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Depts.

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BETTER HOSE CARE – WITH
CIRCUL-AIR
THE AIR CONDITIONING
FIRE HOSE DRYER

Circul-Air is the patented, electrically operated hose dryer which circulates prewarmed fresh air through coiled wet hose at the rate of 5 to 6 air changes per minute. It's designed to lengthen hose life, improve the appearance and functional design of new fire houses, and to save floor space and hard work. No other drying method is so fast — so economical — so easy to use.

Circul-Air Dryers have passed the Approvals Tests and are listed by the Underwriters' Laboratories, Inc., Chicago and the Canadian Standards Association.

Write for Catalog TODAY

THE CIRCUL-AIR CORPORATION
575 East Milwaukee Detroit 2, Michigan

Fog Nozzle Studies

(Continued from page 27)

measured. Also, during the tests, more than 3,000 pumping miles were accumulated on a fire department 750 gpm pumper which supplied pressures.

For low pressure fog nozzles, nozzle pressures were established at 75, 100, 125 and 150 pounds. Other tests are being conducted at present for high pressure fog nozzles. All of the studies are being conducted under identical conditions, as near as possible. Wind velocities were measured, lighting conditions for photography were uniform, and particular attention was given to the time-consuming flow tests, only 3 of which could be conducted each day.

One evident feature of the studies was the heavy air turbulence created by the fog nozzle discharge. With the large caliber nozzles this turbulence was strong even at the doors of the building inside which flow tests and pattern studies were made. (This caused speculation that such turbulence might be useful in hastening ventilation of a fire-involved building.)

The tanks supplying the nozzles were calibrated as shown in pictures on page 26. One supplied 560 gallons while the other held 1,000 gallons. The backdrop used for photographing discharge patterns was marked in 1-ft. intervals. This provided a good contrast which outlined the water fog patterns. Adjustment for maximum nozzle discharge was not determined but four nozzle settings were used for each adjustable nozzle. Straight stream discharges were regulated according to visual estimation of greatest flow.

Thread adapters were used as required, although manufacturers were asked to furnish nozzles with National Standard Threads. Every study was identified by a code number which indicated the manufacturer, type and size of nozzle and the setting.

The sub-committee on Fog Nozzle Studies met at the University of Maryland on November 4 and 5 to discuss preparation of a report of the studies, which will be published by NFPA. Those in attendance included George L. Swan, National Board of Fire Underwriters; Herbert R. Bogardus, Fire Insurance Rating Organization of N. J.; Roi B. Woolley, "Fire Engineering"; Robert C. Byrus, University of Maryland; Warren Y. Kimball, NFPA; John Bryan, University of Maryland; Joseph F. X. Mayhew, Education Commission, Maryland State Firemen's Association; A. A. Brown and I. C. Funk, Forest Service, U. S. Department of Agriculture.

Other members of the sub-committee are: Hubert Walker, American-LaFrance-Foamite Corp.; Kyle Laughlin and Lloyd Layman, FCDA.

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PERFORMANCE PROVEN BY THE PHILADELPHIA STORY

Dec. 1953 6 Halligan Tools ordered on trial
Jan. 1954 36 Halligan Tools purchased
April 1954 75 Halligan Tools purchased

Frank L. MacNamee, Comm., and George E. Hink, Dep. Comm. and Chief of Department, observing that this tool saved life, time and property speedily equipped all Philadelphia Fire Dept. apparatus with it.

- UNLIMITED LEVERAGE
- LIGHT WEIGHT (8½ lbs.)
- FULL BODY PROTECTION
- 3 DRIVING HEADS Hook, Adz, Claw
- Ten tools in one
- Forged (1) piece 4140 steel

WRITE TO: M. A. HALLIGAN, 1505 METROPOLITAN AVENUE, NEW YORK 62, N. Y.

Watch for This!

"Sparky," the symbol of the Home Fire Prevention Campaign sponsored by the NFPA and The Advertising Council, is scheduled to appear in a colorful two-page advertisement in the December 20th issue of *Life;* the January 1st issue of the *Saturday Evening Post;* in *Collier's* for January 7; and in *Look* magazine for January 11. Combined circulation of these magazines is 17 million and readership is estimated at 50 million.

NOW THE FIRST "Packaged" FIRE ALARM SYSTEM

PREVIOUS EQUIPMENT REQUIRED THIS MUCH SPACE

NEW GAMEWELL FORM 4
USES ABOUT THIS MUCH SPACE

For the small community, or for decentralized big city Fire Alarm Systems, The Gamewell Form 4 fills today's needs.

THE GAMEWELL FORM 4

In 20% to 30% of the space previously used, you can install this complete control unit, including batteries.

And the Gamewell Form 4 Automatic Control System enables you to put saved dollars into street fire alarm boxes for public safety and reduced fire losses.

This "packaged" Fire Alarm Control Cabinet is quickly and easily installed. It contains *all* the devices needed for a complete central office setup. It *automatically* repeats box alarms and warns if a circuit is broken. It has a reserve power supply for emergencies and meets NFPA-NBFU Standards.

FEATURES

- **Requires only 20% to 30% of space previously needed for complete central office equipment including batteries.**
- **Quickly and easily installed.**
- **Reserve power for emergencies.**
- **Available in any capacity required to 10 circuits. Readily expanded to meet growing needs.**
- **Automatically repeats box alarms; warns if a circuit is broken.**

Bulletin 3A gives a complete description of the Gamewell Form 4 Control Cabinet. Write for a copy today. No obligation.

THE GAMEWELL COMPANY
NEWTON UPPER FALLS 64, MASS.

GAMEWELL

THE BOX IS POSITIVE
Reduces Human Error

MAKING A GOOD JOB OF IT

BY WARREN Y. KIMBALL

So You Would like to be Chief of the Fire Prevention Bureau?

IN MANY cities the Chief of the Fire Prevention Bureau, or Fire Prevention Division, rates second only to the Chief of the Fire Deaprtment. His position is one of the best stepping stones toward the top job.

The Chief of the Fire Prevention Division frequently heads the Department's public relations program.

He meets business men, civic leaders and heads of various organizations. A number of cities select such officers by a comprehensive examination.

In response to a number of inquiries we have framed typical questions that might be asked of applicants for this job. These cover such subjects as suspicious or incendiary fires, flammable liquids hazards, places of public assembly, fire, health, electrical and building laws and regulations, automatic sprinkler systems, dry cleaning plants, writing fire prevention recommendations, preparing a training course for new inspectors, organizing a public relations program for a specific objective, state and local agencies responsible for writing state fire laws and regulations and other pertinent topics.

The serious student should work out his own answers to these questions based upon local laws and procedures. He should seek to evaluate and cover all the factors involved in each problem. The solving of these questions will suggest other questions that a good fire prevention officer should be prepared to answer. Write these down as they occur to you. Discuss them with your buddies and seek out authoritative answers.

Some may not have a simple answer, but as you seek to answer the typical questions, you can learn to refer to authoritative sources of information and develop an ability to answer related questions that you may encounter in such an examination. At a later date, if interest warrants, we may discuss the implications of each of the typical questions in more detail.

Chief-Fire Prevention Division

1. State what authority the Fire Prevention Division has in the investigation of suspicious or incendiary fires in this city and how this is related to the work of the Police Department and the State Fire Marshal's Department.

2. You are to investigate a suspicious three alarm fire which apparently started on the fourth floor at 2:00 a.m. and destroyed the roof of a four-story apartment building, with a loss of several lives. Living on the 4th floor were a 17-year-old juvenile delinquent with a record of pulling false alarms who could not account for his actions at the time, and a man known to have been intoxicated shortly before the fire. State procedure you would follow in determining cause and responsibility for the fire.

3. A large wholesale gasoline distributor asks for a permit to remove an abandoned 35,000 barrel above ground gasoline storage tank. Outline the precautions and procedures that you would insist upon when granting such a permit.

4. A permit has been requested for a theatrical spectacle to be held in the city auditorium. State what fire safety requirements would have to be observed and what regulations would apply.

5. Which of the following items would at present be under the jurisdiction of the Building Department and which by the Fire Department?

   Automatic sprinkler system protecting the basement of a mercantile block.
   A small automatic foam system for a dip tank.
   Requirements for fire doors.
   Need for additional exits or fire escapes.
   Safeguards for a dry cleaning establishment.
   Fire extinguishers for a garage

   State the procedure you would follow to express the Fire Department's interest in any of the above matters.

6. What laws and precautions must be observed in connection with granting a permit for a new petroleum wharf; for a tank farm which is to have large above ground gasoline and fuel storage tanks; and for a gasoline transport truck loading rack?

7. A district fire chief reports extremely weak discharge from six sprinkler heads during a fire on the second floor of a garment cutting plant. The sprinkler valve was marked open, city water pressure was normal, and the test valve showed good discharge. Tell what some of the reasons for poor sprinkler discharge might be and how they should be investigated and corrected.

8. As Chief of the Fire Prevention Division you are aware of a serious life hazard occasioned by a low-grade hotel of 5-story brick, wood-joisted construction having open stair and elevator shafts . There is no statute by which you can compel the closing of the shafts or provision of automatic sprinklers. Write a letter of not over 300 words to the owner giving your recommendations for reducing the hazard and attempting to persuade the owner to follow these recommendations.

9. Prepare an outline setting forth the subjects you would include in a 30-hour training course for new fire inspectors in your division and showing the approximate time you would allot to each subject.

10. You are directed to organize a new public relations campaign for your department designed to reduce fires due to oil heaters. State in detail how this would be organized including handling this assignment within the department and the part to be played by outside agencies.

11. What State agencies make, or enforce, laws or regulations affecting fire safety? Be specific in naming the agencies and the laws for which they are responsible.

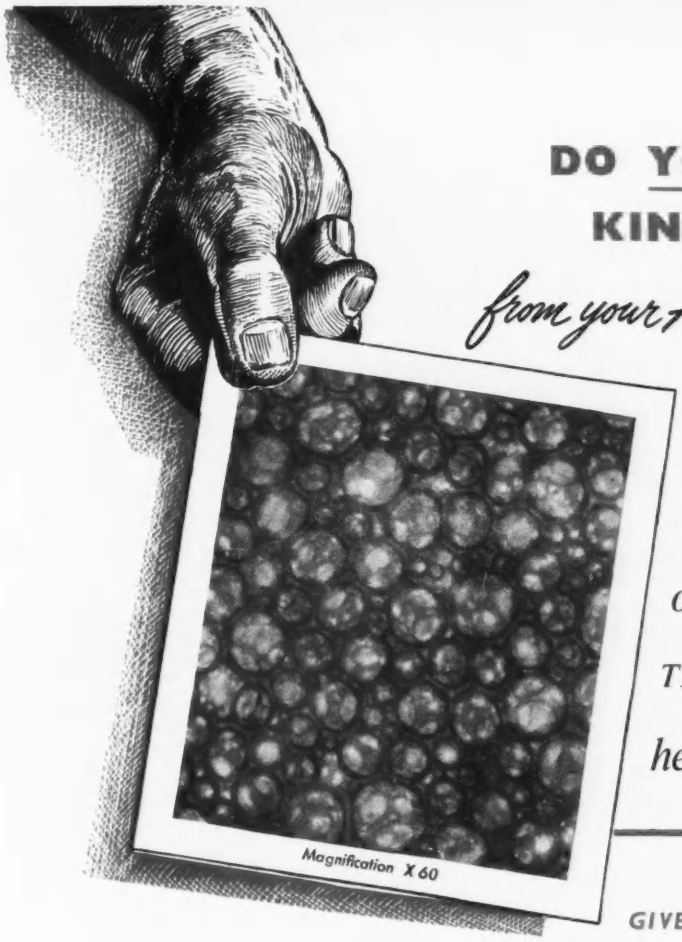
12. List some of the items that may be necessary or useful to a good fire inspector.

13. As Chief of the Fire Prevention Division you find need for strengthening the regulations relative to dry cleaning establishments. Outline the procedure that you would follow in securing such improved regulations and give the references you would use as your authorities in recommending changes in regulations.

14. Fire fighters have notified you that a "plant" for fire setting has been located in a building in which a small fire has occurred. State in detail the procedures you would take for preserving and presenting the evidence in court.

15. Give five ways in which the Fire Department's fire prevention program could be improved.

16. Prepare an organizational plan for a Fire Prevention Week campaign.



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THIS IS WHY *NICEROL*

GIVES GREATER HEAT RESISTANCE

The minute, closely-knit bubbles retain the maximum water content in a foam that is both adhesive and cohesive. This is the reason that Air Foam, made from Nicerol, defies fire breakdown, puts out more fire faster, and definitely outlasts the fire to prevent flashbacks.

NICEROL Air Foam Liquid lasts longer in the can, too, because it is specially processed to prevent corrosion of cans and containers—nor does it form sludge.

NICEROL Air Foam Liquid can be used with all approved types of air foam systems and nozzles.

NICEROL is more widely used throughout the world than any other air foam liquid.

SPECIAL TESTING OFFER

Simply write the one word "SAMPLE" on your official stationery and we will send to you: Freight pre-paid, anywhere in the U.S.A. or Canada, one 5-gallon can of NICEROL Double strength Air Foam Liquid, for $20 C.O.D. (or please enclose check). Test this sample can through your existing foam system—to produce 1,650 gallons of tough foam from only 165 gallons of water, fresh or salt.

The $20 cost of this sample will be deducted from your first order for NICEROL of 100 gallons and over.

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Keeps longer in storage—Puts out more Fire Faster
Outlasts the Fire

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What's New in Fire Equipment, Catalogs and Bulletins

Quaker Rubber Corp., makers of Delaware Fire Hose with Dacron fibre, has added a new 16,000 square foot warehouse to double its factory warehouse space and improve customer service. . . . Electric generating plants in mobile service is the subject of a special issue of "Power Points Digest." For your copy of this pocket sized, 2-color, 20-page booklet, write to *D. W. Onan & Sons, Inc.*, Minneapolis 14, Minnesota. . . . *Fyr-Fyter Co.*, 221 Crane St., Dayton 1, Ohio, announces a new 5-pound pressurized dry chemical extinguisher which shoots a 60-degree-angle stream and is designed for quick, one-hand operation. . . . For your industrial plants Mine Safety Appliances Corp. has prepared a 16-page booklet, "Disaster — Are You Prepared For It?". Based on experiences of companies struck by disasters, this booklet highlights protective equipment needed by workers in rescue, engineering and medical services. Get a copy from *Mine Safety Appliances Co.*, 201 North Braddock Ave., Pittsburgh 8, Pa. . . . Industrial plant readers will be interested in the Tam-Pruf Safety Box designed to keep extinguishers in top condition between refills. For information write to *Erie Safety Products Co.*, 1259 West 65th St., Cleveland 2, Ohio. . . . One person can move three fire extinguishers to the scene of a fire with the aid of American-LaFrance's new fire extinguisher cart. Adjustable height of extinguisher hanger makes this cart useful for various combinations of extinguisher types. Write *American-LaFrance-Foamite Corp.*, Elmira, N.Y. . . . You can make extra money by selling fire prevention to churches, clubs, choirs, etc. Sell Electric Safety Candles for processions and religious services to replace wax candles. For full information, write *Louis J. Lindner*, 153-F West 33rd St., New York 1, N. Y. . . . New Marlow portable pumps for fire departments, forestry services, industrial emergency units, resorts and farms are illustrated in a 4-page, 2-color bulletin available from *Marlow Pumps*, Box 566, Ridgewood, N. J. . . . A new lightweight portable oxygen unit, "Pocketaire," provides cylinder of oxygen for ½ hour at high rate, flow regulator and two disposable masks in sturdy travelling case. *Cycle-Flo Co.*, Milford, Connecticut, will send you complete details. . . . Farms and camps dependent on small domestic pressure tanks and pump installations for their water supply will find "Mist-Er Jet" fog nozzle a valuable, inexpensive first-aid fire fighting device. *Bete Fog Nozzle, Inc.*, 309 Wells St., Greenfield, Mass., has this combination fog or straight stream nozzle in complete kit including hydrant faucet, hose reel and 50 feet of plastic hose.

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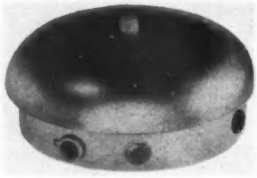
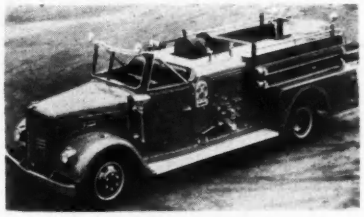


Fire Alarm Thermostat

A new fire alarm unit containing a U. L. listed fire alarm thermostat is announced by Fire Alarm Thermostat Corporation. "Life Saver Jr." Model B unit pictured above includes a 6-inch, loud-ringing polished chrome bell, test button, one "Model A" thermostat, six volt battery and wiring connection for additional thermostats. U. L. listing indicates that the thermostat covers up to 400 square feet of ceiling area. The Model A fire alarm thermostats react at 40 degrees F. or at 200 degrees F. Thermostats may be heat tested during one year life of battery and are self-restoring. For further information and available dealerships, contact Fire Alarm Thermostat Corp., 53 W. 23rd St., New York 10, N. Y.

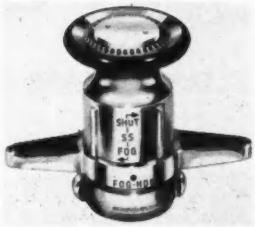


Pumper for Rural Areas

Ward LaFrance Corporation, Elmira, New York, has introduced its new "Fire Ball Special," a 500 gpm fire department pumper designed especially for use in smaller communities and rural areas. The truck is powered by a 183 hp Chrysler engine, has a single booster reel, hose bed, and compartments for extra equipment.

Fire Equipment Catalog

A new catalog listing its complete line of fire equipment has been published by W. S. Darley and Company, Chicago 12, Illinois. It has 100 pages and features 750 illustrations together with prices of hose, gas masks, suggested literature for fire fighters, ladders, pumps, tools and other equipment of value to fire departments. Copies may be obtained by writing to the manufacturer.



Adjustable Fog Nozzles

Shown above is one of the continuously adjustable fog nozzles now being produced by Akron Brass Manufacturing Company, Wooster, Ohio. Named the "Fog-Hog," the nozzles are available in 500 gpm and 1,000 gpm capacity. They feature large swivel-type 'E-Z Grip" handles which permit easy adjustment of flow from straight stream to full fog position.

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THIS Christmas, why not consider giving the NFPA Handbook of Fire Protection as a present? For a relative or friend in the fire service it will be an appreciated gift. It will be received with equal pleasure by a fire station or fire department whose members are developing an up-to-date library on fire control information.

Many fire fighters would like to have their personal copy of this important publication. It's one of the best reference books available to the fire service. It contains a thorough compilation of information pertaining to fire control, fire protection and fire prevention. It provides excellent study material for fire fighters taking promotional examinations.

There are 1,640 pages in this 5½- x 7½-in. volume, handsomely bound in a red fabrikoid cover. The newly revised 11th edition was published early this year and has received such wide demand that a second printing is necessary.

Price of the Handbook is $10.50 per copy. If you send payment with your order, postage will be paid by NFPA. The fire fighter or fire department who receives the "Handbook" as a gift will be using it for practical reference for many years to come.

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